

Railway Age Gazette

PUBLISHED EVERY FRIDAY AND DAILY EIGHT TIMES IN JUNE BY THE
SIMMONS-BOARDMAN PUBLISHING COMPANY
WOOLWORTH BUILDING, NEW YORK.

CHICAGO: Transportation Bldg. CLEVELAND: Citizens Bldg.
LONDON: Queen Anne's Chambers, Westminster.

E. A. SIMMONS, President.

L. P. SHERMAN, Vice President. HENRY LEE, Sec'y & Treas.
The address of the company is the address of the officers.

EDITORS

SAMUEL O. DUNN, *Editor*

ROY V. WRIGHT, *Managing Editor*

W. E. HOOPER	H. F. LANE	C. W. FOSS
B. B. ADAMS	R. E. THAYER	F. W. KRAEGER
E. T. HOWSON	A. C. LOUDON	K. L. VAN AUKEN
H. H. SIMMONS	C. B. PECK	E. G. ZACK

Subscriptions, including 52 regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free:

United States and Mexico.....	\$5.00
Canada.....	6.00
Foreign Countries (excepting daily editions).....	8.00
Single Copies.....	16 cents each

Engineering and Maintenance of Way Edition and four Maintenance of Way Convention daily issues, North America, \$1; foreign, \$2.

Entered at the Post Office at New York, N. Y., as mail matter of the second class.

WE GUARANTEE, that of this issue 8,750 copies were printed; that of these 8,750 copies 7,327 were mailed to regular paid subscribers to the weekly edition, 250 were provided for counter and news companies' sales, 1,067 were mailed to advertisers, exchanges and correspondents, and 106 were provided for samples and office use; that the total copies printed this year to date were 129,450, an average of 8,246 copies a week.

The RAILWAY AGE GAZETTE and all other Simmons-Boardman publications are members of the Audit Bureau of Circulations.

VOLUME 58

APRIL 2, 1915

NUMBER 14

Contents

EDITORIAL:

Editorial Notes	727
Recent Tendencies in Concrete Ballasted Deck Construction.....	728
The Disintegration of the Gould System.....	728
The New England Railroad Situation.....	729
*The Michigan Central and the Big Four.....	731

LETTERS TO THE EDITOR:

Don't Do Business Without a Record.....	733
---	-----

MISCELLANEOUS:

*New Line from Lewistown, Mont., to Great Falls.....	734
*Train Indicators at Euston Station.....	739
Hearings on Western Freight Rate Advances.....	740
The Railroad Crisis; A Way Out; Ray Morris.....	743
*Plant for Handling Scrap on the Boston & Albany.....	745
Train Accidents in February	746
The Passenger Fare Question in Ohio; L. E. Johnson.....	747
*Freight Terminal Car Checking System; I. T. Tyson.....	748
J. W. Bettendorf on Freight Rates and Business Activity.....	750
Cylinders and Valve Gears; G. W. Rink.....	750
Arguments Presented in Enginemen's Wage Arbitration.....	751
*Cooling Hogs in Transit	752
*Steel Frame Passenger Equipment with Wood Finish.....	753

GENERAL NEWS SECTION

*Illustrated.	756
---------------	-----

When the Public Utilities Commission of Illinois was organized, Governor Dunne appointed as its chairman a wholesale grocer named James E. Quan. Mr.

Politics and
the State
Commissions

Quan presided over numerous sessions of the commission, the chief result of which was to show that his knowledge of the business of railroads and other public utilities was very circumscribed. He having resigned, Governor Dunne has appointed to succeed him William O'Connell. Mr. O'Connell was commissioner of public works of Chicago when Mr. Dunne was mayor, he was Mr. Dunne's manager during the latter's campaign for governor and he is now treasurer of Cook County, Illinois. All these things

indicate that he is an active and successful politician. But why has he been appointed to the Public Utilities Commission? We anticipate that as public utility commissioners run, Mr. O'Connell will be above the average in ability and fairness. But his appointment raises the old, old question as to why members of public utility commissions should not be chosen because of their qualifications for public utility commissions instead of because of their qualifications as politicians.

An unusually clear and convincing statement of the argument for the repeal of state two-cent fare laws is that regarding

the situation in Ohio made by President L. E. Johnson, of the Norfolk & Western, in an address before the City Club of Cleveland, which is published in this issue. Mr. Johnson showed that

the question involved is not so much one of increased profits for the companies, as whether by state laws the revenue from passenger service is to continue to be so unfairly reduced that the passenger service will not be self-supporting, the result being that the traveling public will finally suffer in decreased efficiency of service. As the Norfolk & Western is one of the roads that has maintained a division of expenses as between its freight and passenger service, Mr. Johnson was able to show that the operation of its passenger trains in Ohio last year was conducted at an actual loss of \$40,000. While such figures are not available for all roads in the state, Mr. Johnson exploded in one sentence the theory on which fares were reduced, that the increased traffic would more than offset the decreased revenue per passenger. In 1905, under the three-cent rate, the railroads of Ohio carried an average of 44 passengers per train mile, giving a train-mile revenue of \$1.32. In 1914, there were only 50 passengers per train mile, making the train-mile revenue \$1, so that in connection with increased expenses of all kinds the railroads in 1914 received 32 cents less for each train mile for carrying 6 additional passengers. Ohio started the two-cent fare movement by passing a two-cent fare law in 1906. In the face of such a showing it would be very appropriate for the Ohio legislature to take the lead in partially undoing the wrong done.

The New York Central Lines are the first railroad companies to make annual reports in the new form prescribed by the

Interstate Commerce Commission. This

The New
Operating Expenses
Classification

new classification went into effect on July 1, 1914; but the New York Central Lines have reclassified their expenses for the first six months of the calendar year and also their 1913 expenses for purposes of comparison. From an examination of these first reports under the new system it would appear that one of the greatest improvements in the new classification as compared with the old is the more logical and scientific division of maintenance of way expenses. Whereas the old classification provided an account for roadway and track, which included the cost of applying material, of track surfacing and cleaning, policing, changing grades, bank protection and other expenses, the new classification divides these expenses as between roadway maintenance and track laying and surfacing. Thus, in 1913 the New York Central & Hudson River spent, according to the old classification, \$5,269,000 for roadway and track, while according to the new classification the company spent in the same year \$877,000 for roadway maintenance and \$4,392,000 for track laying and surfacing. The splitting of the old account in this way is both logical and helpful. There is, however, included under track laying and surfacing the cost of track maintenance, which includes the labor cost involved in keeping track in alignment, surface and gage. From an accounting point of view it would have been more logical to have included this under roadway maintenance rather than to combine it with track laying. Such a division would have kept entirely separate the two independent variables—cost

of keeping materials already in track up to a certain standard and cost of applying new materials. Roughly, but not strictly, it would have corresponded to the distinction between repairs and renewals.

RECENT TENDENCIES IN CONCRETE BALLASTED DECK CONSTRUCTION

THE Judith river and other viaducts built on the new line of the Chicago, Milwaukee & St. Paul between Lewistown, Mont., and Great Falls, described on another page of this issue, are examples of the most advanced practice in adapting concrete ballasted decks to large steel structures. The use of this type of solid floor is not new but it is only within the last two or three years that it has been placed on structures of this size. The development of solid floor bridges has been most marked on the roads in the middle west, including particularly the St. Paul, the Santa Fe, the Rock Island, the Illinois Central and the Burlington.

Some of the earliest designs of solid floor construction were originated for track elevation subways in Chicago about ten years ago. Here it was necessary to construct solid floors to prevent moisture from seeping through the bridge to the street below. The heavy cost of maintenance, the special track construction required and the noise created by the shallow steel floors first used, led to the adoption of concrete slabs carrying the ballast and standard track construction. A similar development was also brought about near this time by the necessity for greater protection of timber bridges from fire, leading the Santa Fe, the Rock Island, and other roads to apply creosoted timber ballasted decks to these structures. The resulting uniformity of track construction and more satisfactory riding qualities soon led to the adoption of the same type of deck on other structures.

The choice between creosoted timber and concrete ballasted decks is purely an economic one. On roads such as the Santa Fe, passing through large timber areas and possessing extensive treating facilities, the timber deck is somewhat cheaper, although the difference is not great. The difference in weight is also not a material factor. Therefore, on roads not accessible to a suitable supply of timber or without treating facilities, a concrete deck is as economical as creosoted timber at the present time and its relative economy will increase materially with the rising cost of timber.

Confined at first to track elevation, subways and other short spans, the use of the solid floor has been extended gradually until the St. Paul, the Santa Fe, and several other roads have made this standard for all deck girder structures and are applying it on many through and deck spans of medium length. The St. Paul has placed such a deck on several 135-ft. deck girder spans and on deck truss spans 160 ft. long. While not important for short spans, the increased dead load resulting from the solid floor becomes of greater consequence as the length of span is increased. However, the advantages of the solid floor are resulting in a general increase in the length of spans to which this type of floor is being applied. The Santa Fe is placing a creosoted timber ballasted deck on spans 306 ft. long in its bridge crossing the Missouri river at Sibley, Mo., and the New York Connecting Railroad is using concrete ballasted deck on the entire elevated section of its four-track line nearly 10 miles long, including the Hell Gate arch with a span of 1,000 ft.

With the concrete ballasted deck built in units as illustrated in the Judith river viaduct referred to above, several difficulties are presented to the designer. In the first place, when casting a large number of slabs in forms it is very difficult to insure exact uniformity of dimensions. Any error in the forms becomes cumulative and noticeable when multiplied in a number of slabs. The joints between the different slabs have not been waterproofed in any way and there has been some fear that with the moisture and fine particles of ballast dropping down between the slabs onto the upper flanges of the girders there

would be some deterioration of the girders. However, a recent examination of one of the earliest structures of this type which has been in service for seven years, failed to reveal grounds for any serious fear from this source. Another problem which has been given attention has been the tendency for the individual slabs to creep or move longitudinally along the structure. While this movement has been minor, it has been noticed in several structures. To prevent this a recent design of the St. Paul provides for a spacing angle to be riveted to the upper flange of the girder in the field with one leg extending between the adjacent slabs. These, however, are minor details of design which do not affect the practicability of the solid floor deck as a whole.

Several advantages are derived from this type of construction. Probably the most important is that of economy in maintenance cost. With the open floor replaced by the standard ballasted track construction, it is estimated that the cost of maintenance per foot of track on the bridges is reduced one half. At the same time, a better line and a uniform riding track are secured, while the more or less pronounced jar resulting from passing from one form of track construction to another at the ends of open floor bridges is eliminated. Also, a ballasted deck rides as quietly as the adjacent embankment, while the track may be maintained by the regular track forces without the necessity of calling a bridge gang from time to time. A further advantage which may be considered sentimental, but which is present, nevertheless, is the appearance of added strength which the solid floor gives to the layman.

THE DISINTEGRATION OF THE GOULD SYSTEM

IN 1906 the Gould system lacked only about 100 miles of line—which would connect the Wheeling & Lake Erie with the Western Maryland—of a transcontinental system running from Baltimore, Md., to Oakland, Cal. This 100 miles of line was never built because the disintegration had already begun. The backbone—although it was a weak backbone—of the system consisted of the Missouri Pacific and the Wabash. Today the Wabash is in the hands of receivers, and last week the election of a new board of directors of the Missouri Pacific apparently marked the transfer of control of that company to Kuhn, Loeb & Company and associates.

It is worth while to very briefly outline the steps by which a transcontinental system, of which there has never been one in the United States in the strict sense of the word, was so nearly established. Starting in 1876 with the Missouri Pacific, then called the Pacific Railroad of Missouri, which was controlled by Jay Gould, the St. Louis, Iron Mountain & Southern, the International & Great Northern and the Texas Pacific were brought under Gould control. By 1901 the control of the Denver & Rio Grande had been acquired, and previous to this control of the Wabash had been secured. In 1903 the Western Pacific was incorporated to build a line from Salt Lake City, Utah, the western terminus of the Denver & Rio Grande, to Oakland, Cal., and about this time the Goulds acquired control of the Wheeling & Lake Erie, the western extension being carried out on the credit of the Denver & Rio Grande and the eastern on the credit of the Wabash. The Wheeling & Lake Erie, through the construction of the Wabash-Pittsburgh terminal and the West Side Belt, got an entrance into Pittsburgh. The Goulds acquired the Western Maryland, which ran from Bellington and Elkins, W. Va., to Baltimore, Md. It was only about 100 miles from the southeastern terminus of the Wheeling & Lake Erie to Bellington. The Baltimore & Ohio already had a connection across here, but before the Goulds could build a line, the cost of the entrance into Pittsburgh broke the system's back.

The history of the system since the Wabash-Pittsburgh terminal receivership has been the record of a long fight against economic principles, in which economic principles have been triumphant in every instance. The Rockefellers gradually took over a large part of the Gould holdings of the Western Maryland; the Wabash, after a long up-hill fight, went into bank-

ruptcy; the Missouri Pacific went from bad to worse, and in 1912 was only saved from passing out of the control of the Goulds by a very narrow margin; year by year the Western Pacific became a more unbearable burden to the Denver & Rio Grande until it has been decided to make some default or some compromise in the payment of the Western Pacific's first mortgage bonds, and now George Gould and all but one representative of the Gould estate have retired from the board of directors of the Missouri Pacific.

The causes for the failure of the ambitious plan, backed as it was by the great personal wealth of the Gould estate, may be roughly divided into two classes: The mistakes which were made in carrying out the plan, and the inherent weaknesses of the plan itself. In the first class will be included poor management, shortsighted policies of maintenance and betterment, purchases at excessive cost, etc. In the second class are the inherent and ruinous waste of competition and the undermining of self-supporting local business through the reductions in rates made by state commissions. Every link of this transcontinental system was a line competing for through business with other railroads better situated, better managed or stronger financially. Although, of course, the extension west from Salt Lake City, as well as the acquisition of lines running east from the eastern terminus of the Wabash, might be expected to create new business, the avowed primary object was to secure traffic for the system which was then being secured and adequately handled by other railroads.

In a way the Gould attempt to establish a transcontinental system was an effort on the part of a single system to solve a problem which the roads in central freight association territory and the western roads have taken to the Interstate Commerce Commission. The Missouri Pacific and the Wabash are both economic assets to the territory which they serve of sufficient value to warrant adequate support. On the other hand, competition for the traffic which this territory has to offer was so keen that in self defense the Wabash and the Missouri Pacific had lowered rates to a point where they were not adequately remunerative. An individual system could not, of course, raise its rates without a simultaneous increase in rates by its competitors. To overcome this situation, therefore, the Goulds tried to secure additional traffic over the Missouri Pacific and the Wabash by buying or building "feeders" with termini at the Atlantic seaboard on the one hand, and the Pacific ocean on the other. It was a case of the tail trying to wag the dog. The Pennsylvania in the East lay entrenched in a position so strong that it could afford to support highly competitive lines running out from Pittsburgh west, and the Southern and Union Pacific were so strongly entrenched in California that they could afford to support their lines extending east across the desert. The Goulds, on the other hand, attempted to use as a base of operations the lines in highly competitive territory of the Wabash and of the Missouri Pacific and the lines of small local business of the Missouri Pacific to throw out highly competitive lines into the home territory of the Pennsylvania and of the Southern Pacific.

The case of the Denver & Rio Grande has not been mentioned. This road had a very profitable local business. It was a very expensive line to operate, but it had large sections of country rich in mineral resources where there was no competition. Left to itself it could, and probably would, have been a successful local railroad property. Its credit, however, was used to build the Western Pacific, while at the same time state commission orders reduced its compensation for the handling of local business, both freight and passenger, to a point that probably would have threatened the solvency of the company, even without the drain of the Western Pacific guarantees.

There are lessons which can be learned from this experiment: One is that either the eastern roads controlling central freight association territory roads will have to continue supporting these roads, or else there will have to be further large readjustments in rates in these territories. The day of competitive rail-

road building is over; the form of competition for traffic has radically changed. It is no longer so much dependent on the efficiency of the traffic solicitors as it is on the quality of service rendered by the transportation department. This was a point which was never fully appreciated apparently by those in control of the Gould system.

THE NEW ENGLAND RAILROAD SITUATION

FROM the standpoint of all the interested parties the railroad situation in New England is at present very serious, and this makes the business situation in that territory serious. No part of the country more imperatively requires good railway service in order that it may prosper than New England. Whether the solution of its railroad problem shall be made in some satisfactory way at an early date, or shall be indefinitely postponed and some of its principal railways shall be thrown into bankruptcy with the resultant demoralization of transportation and the consequent losses in all lines of business, depends on what action shall be taken by the legislatures of the New England states during their present sessions.

The acute problem presented is due to the financial condition of the two principal lines—the Boston & Maine and the New York, New Haven & Hartford. The Boston & Maine is already bankrupt and only a thoroughgoing reorganization can put it on its feet and fit it to render the service needed by the communities it serves. The New Haven, in addition to other difficulties, has outstanding \$53,000,000 of floating debt, of which \$33,000,000 matures between now and the middle of May and \$20,000,000 in 1917. In order to help it to renew the notes falling due before the middle of May and to afterward put its finances on a sounder basis, it needs legislation validating certain stock and permitting it to refund its floating debt.

The situation immediately confronting the Boston & Maine is not merely serious, but desperate. Not many years since it was regarded as a strong railway and its stock commanded high prices. As recently as in 1909 and 1910 its fixed charges and dividends were earned and paid. In 1911, 1912 and 1913 it did not earn its dividends. In the fiscal year 1914 it not only did not earn any dividends, but failed by over \$2,000,000 to earn its fixed charges; and its results since then have been discouraging. With its earnings in this condition it had \$22,626,000 of short-time notes come due on March 2, 1915. The holders of 98 per cent of these have renewed them for six months pending action on plans for the reorganization of the system. If the legislatures should adjourn without agreeing on some such plan a receivership would result.

Why has a railway which a few years ago seemed to be doing so well been brought so quickly to such a plight? This has been due partly to the road's management under Mr. Mellen, partly to its financial organization, but mainly to increases in expenses and taxes, such as have taken place on all railways. The Mellen regime is ended. The passenger and freight rates are undergoing a readjustment which will at least partially offset the increases in expenses and taxes. But, as President Hustis has frankly stated, it is probable that no changes in its rates can be secured which will be sufficient to save the Boston & Maine unless the railway system itself is radically reorganized.

The Boston & Maine Railroad proper is a relatively small part of the Boston & Maine system. The company actually owns only a little more than 700 miles out of a total operated system of about 2,400 miles. The greater part of the system consists of roads which are leased to the Boston & Maine. The principal of these are the Boston & Lowell, the Concord & Montreal and the Fitchburg, and the total mileage of the leased lines is over 1,500 miles. When these lines were leased to the Boston & Maine the railways of the country were relatively prosperous and apparently promised to become more so; and the then management of the Boston & Maine contracted with the owners of the leased roads to pay them rentals ranging as high as 7 to 10 per cent. While business continued good and the net earnings

of the system were substantial these leased lines were valuable to the Boston & Maine. But when increases in wages, taxes and other expenses and reductions in rates and losses of traffic began to reduce net earnings the position of the Boston & Maine rapidly weakened. It had to pay the high rentals for which it had contracted as well as the interest on its own bonded debt, in consequence of which its total fixed charges were heavy; and at the same time it had to bear the entire loss of net earnings both on its owned lines and on its leased lines. The capitalization of the Boston & Maine system is about \$200,000,000, or a little over \$94,000 a mile, as compared with \$136,000 for the Boston & Albany and \$240,000 for the New Haven. Of this total, \$160,000,000 is the capitalization of leased and controlled lines, on practically all of which a return has had to be paid whether it has been earned or not, while only about \$40,000,000, or 20 per cent, is the capitalization of the Boston & Maine proper. Of the total per mile of \$94,210, no less than \$46,290, or almost half, represents leases, and \$29,390 represents funded and non-funded debt, leaving only \$18,530 of capital stock on which the payment of a return could be suspended. It is perfectly evident from this that, while the total capitalization of the system is not heavy for the territory in which it operates, the Boston & Maine's fixed charges are wholly excessive under the conditions which now exist and which will probably continue to exist for some time. Furthermore, it is apparent that the main reason why the Boston & Maine's fixed charges are excessive is that it contracted to pay amounts to its leased lines which may have been reasonable when the leases were made, but which, owing to changed conditions, have become unduly burdensome and will continue to be so. It is clear, therefore, that the owners of the leased lines must voluntarily give up their claims under their leases and enter into some new relation to the Boston & Maine, or that the company must go through bankruptcy, in which case all of the unprofitable leases would be canceled and the system would be broken up.

The owners of the leased lines have much to lose and nothing to gain by having the system disrupted and their roads thrown back on their hands. Some of the leased lines, such as the Boston & Lowell, are themselves made up largely of leased lines, and if the system were broken up they would speedily find themselves in the same situation that the Boston & Maine is in now. The various parts of the system could not be operated separately with profit. Each would have to have its own staff of officers. Each would have to provide independent terminal and other facilities in place of those which they now use jointly. Each would be cut off from markets which it now reaches over the lines of the others. Even if they would have enough credit individually to raise the money for new investment that they would require, which is wholly improbable, each would have its fixed charges and operating expenses increased and its business injured in a hundred ways. The day when such small properties could be operated independently with profit in a territory such as New England long since passed. From the standpoint of the New England public, an attempt to operate them separately would be disastrous; for the traffic of the territory speedily would become demoralized.

The only alternative to the dissolution of the system is a reorganization under which the leases will be canceled and the properties composing the system will be practically or completely merged under the ownership of a single corporation. If the owners of the leased lines are to save the most that they can they will have to do so as owners of the securities of the system rather than as owners of leased lines receiving a guaranteed return. It will be to their best interest for them to co-operate in preventing the system from going into a receivership, which, under present conditions, probably would last for some years and result in heavy losses to all concerned.

The need for a speedy reorganization is generally recognized, but efforts are being made to get for the owners of the leased lines more than can be conceded to them. Obstacles are being

thrown in the way of the needed legislation, and provisions in it are being suggested which would render it practically impossible to effect a satisfactory settlement. For example, the Public Service Commission of Massachusetts proposes that the consent of two-thirds of the stockholders of each of the 25 interested corporations be requisite to the adoption of a plan of reorganization. When the Boston & Maine was taken from the control of the New Haven a board of five trustees composed of some of the most prominent and public-spirited citizens of New England was appointed by the Federal government to vote the New Haven's stock in the Boston & Maine until it could be disposed of. These trustees have recommended legislation to the various states which they believe will be fair to all concerned, and it seems clear that the legislation they have recommended should be adopted. The Springfield (Mass.) Republican usually expresses the most independent and intelligent opinion of New England, and, in advocating the adoption of the trustees' plan, it says: "It would surely be impossible to frame a reorganization plan for the Boston & Maine that would be free from objections. It used to be said in the days when the resumption of specie payments was the leading issue in the United States that the way to resume was to resume. So in the case of the Boston & Maine, the way to reorganize is to reorganize as simply, directly and expeditiously as possible in order that the system may be saved from a receivership."

Due consideration should be given to the rights and interests of those who leased their railways to the Boston & Maine company and turned their management over to it. But consideration should also be given to the rights and interests of those who in good faith have invested in the securities of the Boston & Maine itself, as well as to all the business interests of New England. If the rights and welfare of all be given due weight the legislatures will adopt some plan under which, while all directly affected will suffer some losses, the system will be held together and put on a basis where it can be so managed as in the long run to serve and promote the interests of all concerned.

Turning from the Boston & Maine to the New Haven, we find a peculiar situation. The New Haven has been developed and operated under charters from both Massachusetts and Connecticut. Massachusetts long has had a law which has authorized its state commission to regulate the issuance of railway securities and which prescribes the way in which this shall be done. Connecticut, on the other hand, has allowed railways, and the New Haven in particular, to do their financing very much as they have pleased. Prior to 1910 the New Haven, under its Connecticut charter, issued many securities which it could not have issued under its Massachusetts charter and the laws of that state. In 1910 the Massachusetts legislature, in order to clear up this situation, passed a law validating under the statutes of Massachusetts all the securities previously issued. Even after this the Mellen management of the New Haven continued to issue securities which it could not have issued under the laws of Massachusetts. In consequence, the New Haven now has out \$52,500,000 of stock which has not been formally validated under the laws of Massachusetts, in addition to the short-time notes already mentioned. There will, therefore, be a cloud upon this stock, and for this and other reasons it will be impossible to so refund the New Haven's floating debt as to reduce its fixed charges, until special legislation is passed by the Massachusetts legislature.

The question as to what should be done about these matters was referred by the legislature to the Public Service Commission of Massachusetts for investigation and report. In February the commission made a report in which it criticised the policy of the state of Connecticut and also condemned the Mellen management for taking advantage of the laws of Connecticut and disregarding the laws of Massachusetts. But the commission recognized the fact that the harm which had been done could not be undone; that the management of the New Haven had been changed; and that the present management had publicly pledged

itself to refrain from the use of the methods which characterized the Mellen regime. In view of all the facts the commission concluded that it was to the interest of the public for legislation such as that being sought by the present management of the New Haven to be passed. It pointed out that such legislation would not increase the capitalization of the road, since the securities in question are already in the hands of the public, and that it would tend to reduce the New Haven's fixed charges and thereby enable it to make improvements which are needed in order that it may render adequate and satisfactory service.

However, much condemnation the former management of the New Haven may deserve, and however disagreeable it may be to the people of Massachusetts to have legislation passed to validate acts committed in disregard of their laws, the conclusion of the Public Service Commission seems the only rational one that could be reached. As the commission's report shows, the people of New England and of the United States must assume a part, and a large part of the responsibility for such mismanagement as has occurred on the New Haven. The old management could not have done what it did if Connecticut had not passed laws permitting it to do so. The New Haven could never have acquired control of practically the entire railroad system of New England if the Department of Justice of the United States had acted as vigorously to have it enjoined from violating the Sherman anti-trust law as it did to break up the combination long after it was formed. There probably never would have been a holding corporation in the United States if certain states for their own selfish advantage had not passed special laws expressly authorizing them to be created. Since the people, through their state and national governments, have permitted and even expressly authorized, a large part of the acts on the part of corporations, the results of which they are now trying to destroy, the people should be willing to suffer their share of the harm which has been done and to co-operate with the corporations in making the consequent period of readjustment as short and the suffering and losses caused by it as small as possible.

THE MICHIGAN CENTRAL AND THE BIG FOUR

THE two principal subsidiaries of the New York Central Railroad are the Michigan Central, operating 1,800 miles of road, the greater part of which lies within the state of Michigan, and the Cleveland, Cincinnati, Chicago & St. Louis, operating 2,381 miles of road, nearly all of which is within the three states of Indiana, Ohio and Illinois. The effect of the business depression was even more strikingly shown in the results of operation of the Michigan Central and the Cleveland, Cincinnati, Chicago & St. Louis in 1914 than in the results of operation of the New York Central and the Lake Shore (*Railway Age Gazette*, March 26, page 683), the combined properties of which are now operated as the New York Central Railroad. This is because one of the two subsidiaries was being operated previously on a narrow margin of safety above the bond interest and the other at a deficit. The final deficit on the Big Four compares favorably with the deficit in 1913 because of the flood conditions in that year.

The Michigan Central had \$414,000 available for dividends at the end of 1914, so that after the payment of 4 per cent, calling for \$750,000, the company had a deficit of \$334,000. The Big Four had a deficit, after paying its fixed charges, of \$1,974,000. Total operating revenues on the Michigan Central amounted to \$33,465,000 in 1914, a decrease as compared with 1913 of \$3,212,000. The Big Four had operating revenues in 1914 of \$35,366,000, a decrease of \$2,248,000. Both companies reduced expenses in greater proportion than the reduction in revenue, the Michigan Central operating in 1914 on a 75.25 per cent ratio of expenses to revenue, as against a 76.35 per cent ratio in 1913, and the Big Four on an 81.87 per cent ratio in 1914, as against an 87.23 per cent ratio in 1913.

The loss in revenue on both roads was very largely due to

loss in freight traffic. In 1914 the Michigan Central carried 19,196,000 tons of revenue freight, a loss as compared with 1913 of 2,654,000, and the Big Four carried 26,078,000 tons of freight in 1914, a loss of 3,535,000 tons. With the exception only of an increase in the tonnage of fruit and vegetables, forest products other than lumber, and cement, brick and lime on the Michigan Central, the tonnage of nearly all commodities on both roads showed decreases in 1914 as compared with 1913. The heaviest losses on the Michigan Central were in the tonnage of anthracite and bituminous coal, 1,212,000 tons of anthracite being carried in 1914, a loss of 311,000 tons, and 3,447,000 tons of bituminous coal being carried in 1914, a loss of 469,000 tons. The largest losses on the Big Four were in the tonnage of lumber, which loss amounted to 659,000 tons, the total carried in 1914 being 1,748,000 tons; in the tonnage of grain, the loss being 570,000 tons and the total carried in 1914 being 1,327,000 tons, and in the tonnage of bituminous coal, the loss being 368,000 tons and the total carried in 1914 being 11,827,000 tons. A loss in grain tonnage on both the Michigan Central and the Big Four is noticeable because there was, of course, a bumper crop in the fall of 1914. The Michigan Central carried 1,062,000 tons of grain in 1914, a loss of 122,000 tons as compared with the year before. The explanation is probably that there were very large purchases of grain for export by agents of the English and French army and that the greater proportion of this grain was routed via Canada for export at Montreal. The much heavier loss to the Big Four than to the Michigan Central would bear out this assumption.

As already mentioned, both companies succeeded in making very heavy cuts in expenses, the total saving for the Michigan Central being \$2,822,000, or approximately 10 per cent, and on the Big Four the total saving being \$3,857,000, or 12 per cent. The following table shows the percentage of each class of expenses to total operating revenues for the two roads in 1914 and 1913:

	1914		1913	
	M. C.	Big Four	M. C.	Big Four
Maint. of way and structures...	10.84	13.40	13.30	15.27
Maint. of equipment.....	15.98	21.81	16.60	23.76
Traffic expenses	2.28	2.53	2.17	2.58
Transportation expenses	42.35	41.23	40.94	42.83
Miscellaneous operations	1.74	0.85	1.64	0.89
General expenses	2.06	2.13	1.70	1.90
Total	75.25	81.87*	76.35	87.23

*Of the total in 1914 for the Big Four 0.08 per cent represents "transportation for investment credit."

Transportation expenses on the Michigan Central amounted to \$14,170,000, a saving as compared with 1913 of \$843,000. On the Big Four transportation expenses amounted to \$14,582,000, a saving of \$1,528,000. The ton mileage of all freight on the Michigan Central was 3,205,000,000, a decrease of 532,000,000 ton-miles. The total number of passenger-miles handled was 434,800,000 in 1914, a decrease of 14,700,000. It will be noted, therefore, that the reduction in transportation expenses was not proportionate to the smaller amount of freight business handled, but this is probably partly accounted for by the comparatively small decrease in passenger business. On the Big Four the total ton mileage in 1914 was 4,601,000,000, a decrease of 230,000,000 as compared with 1913, and the total passenger mileage was 440,600,000, a decrease of 25,500,000 as compared with 1913. The Big Four, therefore, succeeded in reducing its transportation expenses to a greater extent even than the falling off in freight business. Passenger business did not fall off but about 5 per cent, so there was little, if any, chance for economy in this service.

Both the Michigan Central and the Big Four had a heavier average trainload in 1914 than in 1913, the Michigan Central's being 463 tons in 1914, an increase over the previous year of 6 tons, and the Big Four's being 571 tons, an increase of 62 tons over the year before. These figures for both companies are for total trainload, including company freight. Both the Michigan Central and the Big Four had better engines in

freight service in 1914 than in 1913, a large number of Consolidation locomotives having been converted in the previous year into Mikados; and, of course, also with a falling off in business it was possible to use only the engines in best condition and best adapted to the work required of them. The Michigan Central, however, with its large proportion of diversified commodities, and commodities which must be

Big Four it was 23.3 in 1914 as compared with 21.8 in 1913.

The cut in maintenance expenses on both the Michigan Central and the Big Four appears to be heavy. As will be seen from the table at the end of these comments, the reduction in maintenance of way expenses amounted to about 26 per cent on the Michigan Central and 17 per cent on the Big Four. The saving in maintenance of equipment expenses



The Michigan Central and the Cleveland, Cincinnati, Chicago & St. Louis

moved, whether a full carload or a full trainload is obtainable or not, could not show in its average trainload figures for 1914 as big a gain as could the Big Four, with its larger proportion of coal and other drag freight. Average carloading on the two roads illustrates this point. The average carload per loaded car of all freight on the Michigan Central was 17.42 tons in 1914 as against 17.92 tons in 1913. On the

was proportionately as great on the Big Four, but not so large as on the Michigan Central. In regard to the decrease in maintenance of way expenses on the Michigan Central President Smith says: "The decrease in maintenance of way and structures is accounted for by general retrenchment affecting nearly all of the items in this group." The decrease in maintenance of way expenses on the Big Four represents

in part a reduction in the amount of material used in replacement and renewals, but also in part a saving in wages, larger proportionately than the reduction in amount of work done. Thus the reduction in payrolls amounted to \$673,000, which is more than half of the total reduction, notwithstanding the fact that there was an actual increase in the amount spent for ties and rails and for shops and engine houses.

The decrease in expenditures for maintenance of equipment, as shown by the table, is larger than the actual difference in the upkeep of the cars and locomotives as between the two years. In 1913 on both the Michigan Central and the Big Four a number of Consolidation engines were converted into Mikados, as previously mentioned. A part of the charge for this work was made to maintenance of equipment and a part, of course, to additions and betterments. There was nothing to correspond to this charge to maintenance of equipment in 1914. Taking this factor into consideration, the actual expenses per mile run for repairs were as liberal in 1914 as in 1913. This is true when applied to work done, as distinct from cost of work done, even on the Big Four. In the latter part of 1912 and the early part of 1913 the Big Four was so hard pushed to find equipment enough to handle its business that its own shops proved inadequate to make necessary repairs quickly enough. A considerable amount of work was therefore let out to contract shops, which proved more expensive than if the company had done its own work; and, furthermore, the bills for this work done in 1912 strung along into 1913, while in the latter part of 1913 a vigorous policy of cleaning up bills and of making charges to expenses, if necessary, on a basis of accruals, so as to get in the expense in the period in which it belonged, was made, and therefore the 1913's maintenance of equipment accounts were not properly representative of the amount of work done in that year.

The Michigan Central spent \$1,434,000 for additions and betterments in 1914 and the Big Four \$6,449,000. More than half of the amount charged by the Big Four is accounted for by the charges for equipment acquired under the 1914 equipment trust.

At the end of 1914 the Michigan Central had \$2,448,000 cash and \$9,364,000 bills payable, and the Big Four \$2,979,000 cash and \$8,042,000 loans and bills payable. The principal changes in the securities outstanding were the sale by the Detroit River Tunnel Company of \$4,000,000 4½ per cent 50-year bonds, guaranteed by the Michigan Central, and the sale by the Big Four of \$3,870,000 of its equipment trust certificates. These Big Four equipment trust certificates were in addition to the liability which the company assumed for its share of the New York Central Lines equipment trust, under which a total of \$6,944,000 certificates were issued during 1914, of which the Big Four's assignment of equipment and corresponding liability amounted to \$619,000 and the Michigan Central's to \$715,000.

The following table shows the principal figures for operation for the two companies in 1914 and 1913:

	Michigan Central		Big Four	
	1914	1913	1914	1913
Average mileage operated...	1,800	1,800	2,381	2,365
Freight revenue	\$20,717,272	\$23,169,518	\$23,436,211	\$25,133,116
Passenger revenue	8,880,613	9,369,055	8,589,012	8,891,201
Total operating revenue....	33,464,968	36,676,972	35,365,691	37,613,498
Maint. of way and structures	3,628,376	4,876,534	4,740,009	5,742,960
Maint. of equipment.....	5,349,079	6,088,756	7,713,041	8,935,846
Traffic expenses	762,657	800,660	893,604	971,429
Transportation expenses...	14,170,444	15,013,847	14,582,391	16,110,019
Miscellaneous	583,480	600,253	301,396	334,763
General expenses	687,447	623,049	753,278	716,452
Total operating expenses...	25,181,484	28,003,099	28,954,969	32,811,468
Taxes	1,598,350	1,392,814	1,528,027	1,408,769
Operating income	6,681,796	7,281,058	4,874,086	3,393,261
Gross income	7,608,158	8,527,115	5,811,928	4,214,511
Net income	414,419	1,283,161	*1,973,687	*2,849,661
Dividends	749,520	1,124,280	.....	.....
Surplus	*335,101	158,881	.....	.....

*Deficit.

Letters to the Editor

DON'T DO BUSINESS WITHOUT A RECORD

MEMPHIS, Tenn.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

Since the telephone has come to be generally used for train despatching there is a tendency to do a lot of other work on it; work which should be handled by telegraph or on a telephone circuit separately assigned for the handling of outside matter. By the telephone there is tracing of cars, issuance of instructions and transmitting all kinds of information and of which there is no record whatever. It may end up in a misunderstanding. This has frequently occurred, and caused a bad mix-up, and in addition unnecessary expense. A question of veracity frequently makes trouble.

A great deal of this is brought about by station operators taking the view that if a matter is highly important and they cannot raise the operator that is wanted, the despatcher is the man to go to for the desired information. This is done in hundreds of cases.

When it takes all the way from two to six hours to transmit a telegram a distance of 300 to 600 miles and get an answer, there is something wrong. It is not the fault of the telegraph, but of those trying to operate it. Again, some of this is chargeable to clerks who do not want to take time to write a message and who just go into the despatcher's office and have the despatcher get what they want. On the other hand, had they filed a message very likely it would have hung on the hook for two hours before action would be taken on it; this, with the time lost at the other end, makes a bad delay, and we can hardly blame those who are in quest of important information for bothering the despatcher.

The telegraph service should be checked up closer. Getting information over the telephone may, for lack of a record, lay the foundation for a law suit.

While handling important matters on the telephone you are hampering the despatcher with his work. Every move made by him means dollars and cents to the company. To distract his attention from his train work to find out if some car left somewhere yesterday or last week may indirectly cause a serious complication in train movements.

Cannot superintendents of telegraph and managers of telegraph offices check their business more closely and show up the parties at fault? At all events, important communications—and one should be very cautious in deciding that a message is *not* important—should be put in writing at one end of the route or the other.

L. J. C.

ARMORED TRAINS IN ACTION.—Some interesting details have recently been published concerning the operation of armored trains at the front. These trains did especially useful work during the siege of Antwerp and the subsequent retreat, when they were entirely under the command of British naval officers, who, according to circumstances, worked independently of or in conjunction with the military authorities. The standard armored train is composed of three locomotives, three long cars mounting 4.7 naval guns, a covered ammunition car, and a large covered car, the last known to members of the "crew" as the "chart-room." A locomotive is placed at each end of the train and one in the middle, and locomotives and the vehicles alike are well protected by armor plate. The "chart-room" to which reference is made carries special maps, compasses and instruments, a stock of rifles and ammunition, and comfortable chairs, besides refreshments and newspapers, and the whole is well warmed and lighted by electricity. It is said that the crew of one train was provided with a sleeping car, which was left behind at the nearest siding, to which the crew would return every night.

New Line From Lewistown, Mont., to Great Falls

The Chicago, Milwaukee & St. Paul Has Recently Completed a 138-Mile Extension of Permanent Construction

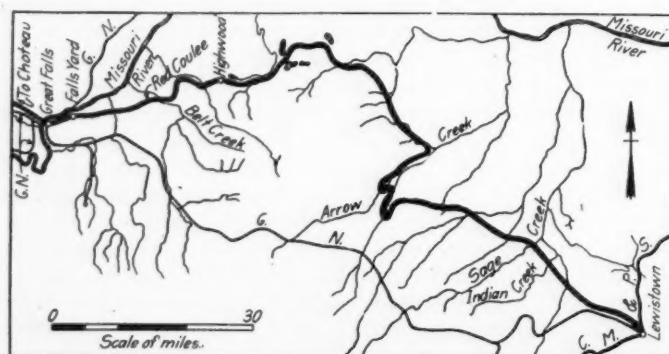
Immediately upon the completion of the coast extension of the Chicago, Milwaukee & St. Paul, about five years ago, this company began the construction of branch line feeders into the contiguous country, practically all of which had been regarded heretofore as Hill Lines territory. One of the most aggressive invasions of this nature is the construction of a new line from Lewistown, Mont., northwest 137.7 miles, to Great Falls. This line has been completed and opened for local freight and passenger service recently, and a further extension is under construction from Great Falls, northwest 67 miles, through Choteau to Agawam. This new line not only opens up for settlement a

than the parallel line of the Great Northern between the same points. The country traversed is generally rolling, with occasional high benches and with very precipitous and deeply eroded stream beds. The benches are frequently close to the streams, making the problem of locating a satisfactory crossing more than usually difficult, especially since this line crosses the drainage approximately at right angles. At the crossing of Arrow creek the bench one mile east of the stream lies 800 ft. above the creek, and it was necessary to develop the line and to sacrifice 14 miles in distance to secure a crossing. At this point particularly, but also at Sage and Belt creeks, a very rough formation, closely resembling that found in the Bad Lands of North Dakota, was encountered, requiring very heavy and expensive work, which at Belt creek averaged 100,000 cu. yd. per mile for six miles. In fact, practically all the heavy work of the entire line was encountered in crossing these gashes.

The maximum grade in each direction was established at 1 per cent, except in descending into Arrow creek from the east, where a 1.5 per cent grade was inserted for 10 miles. All grades were compensated .04 per cent per degree for curvature. The maximum curvature was fixed at 8 deg. The construction of this line required the excavation of over 5,500,000 cu. yd. of materials, including 1,400,000 cu. yd. of earth, 2,500,000 cu. yd. of hard pan, 1,025,000 cu. yd. of loose rock and 575,000 cu. yd. of solid rock.

With the exception of a few temporary timber bridges constructed on the 10 miles of 1.5 per cent grade descending into Arrow creek, all structures were built of permanent construction. As this line crossed the drainage at right angles, large steel viaducts were required at the crossings of Judith river, Indian, Sage and Belt creeks, and Red coulee. Numerous long concrete arches were required under high fills at other points. The total amount of steel work required on this line was 10,000 tons, in addition to 76,000 cu. yd. of concrete.

Starting from a connection with the old Montana Railroad at Lewistown the new line of the Milwaukee parallels a branch of the Great Northern, built into Lewistown two years ago from a connection with the Billings-Great Falls line at Moccasin,

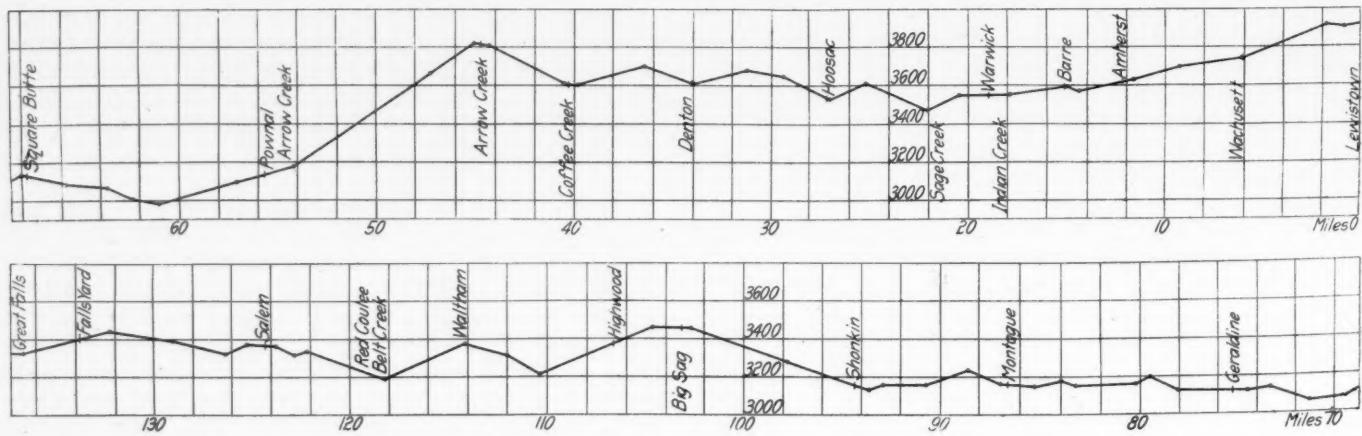


Map Showing New St. Paul Line Between Lewistown and Great Fall

large area of very productive agricultural land in the Judith basin in central Montana, but also gives the St. Paul an entrance into Great Falls, the second city in commercial importance in Montana. The permanent character of the construction adopted also indicates the possibility of this line eventually forming a link in an alternate route to the Pacific coast.

GENERAL DETAILS

At the time the St. Paul built the coast extension, it purchased the Montana Railroad, extending from Lombard on the Northern Pacific to Lewistown, and completely rebuilt that por-



Profile of New Line Between Lewistown and Great Falls

tion from Lombard to Harlowton, making it a part of the main line. This new line extends northwest from a connection with the old Montana Railroad at Lewistown, generally parallel to, and about 20 miles northeast of the Billings-Great Falls line of the Great Northern.

In order to traverse the center of the Judith basin it was necessary to adopt a line 20 miles longer and with higher grades

crossing Big Spring creek, nine miles out of Lewistown, with the Great Northern on a single track gauntletted timber trestle, 1,300 ft. long and 80 ft. high, which is to be replaced by double track embankment. Beyond this point the Great Northern branch swings to the west, while the St. Paul line continues northwest, crossing Judith river and Indian and Sage creeks in the next 12 miles. After crossing the divide between Sage and Dry Wolf

creeks, in Sage creek tunnel, this line traverses rolling country, requiring only moderately heavy embankments, until it reaches the bench near Belton, above Arrow creek, 23 miles beyond the crossing of Sage creek. From this point the line descends toward Arrow creek for 15 miles, 10 miles of which is on a 1.5 per cent grade on a supported line, requiring very heavy work through a badly broken formation. After leaving Arrow creek the line then continues across a fairly light rolling country for 50 miles, until it reaches Belt creek. The next 9 miles, including the crossings of Belt creek and Red coulee, involved some very heavy work. The remaining 17 miles into Great Falls were quite light.

THE GRADING

The grading was handled by steam shovels, elevating graders, fresnos and station men. Much of the material in the heavy portions of this line was moved by the station men who trapped the material into cars. Six steam shovels were also employed to carry out the work at various times. Aside from the crossings of the streams, the largest fills ranged from 55,000 to 150,000 cu. yd.

Six tunnels were constructed with a total length of 5,333 ft.

AMPHITHEATER SLIDE

The most puzzling problem, which arose in connection with the grading, developed at a large slide at the east end of tunnel 4, known locally as Amphitheater slide from the shape of the mountain at that point. Here the entire side of the mountain has been moving at irregular intervals ever since the first stages of the work destroyed the equilibrium, until now the original grade line, which is about 190 ft. above the level of the flats, has settled over 100 ft., going down as much as 7 ft. in 48 hours. This material has broken about 150 ft. above grade, and is moving on a stratum inclined about 10 deg. from the vertical. In addition to the vertical settlement, it has moved 75 ft. laterally during this time. The adjacent end of tunnel 4 was also moved about 14 in. out of line, which caused a serious distortion of the easternmost 200 ft. of the tunnel, and made necessary the retimbering of the bore for this distance. At the time this distortion became apparent, the bore was preserved, as far as possible, by timber struts placed between opposite wall timbers and the retimbering was done just ahead of the placing of the concrete lining. A peculiar characteristic of this slide is the fact that the movement is the greatest during dry weather, and



Amphitheater Slide Showing Steam Shovel Working at Grade in the Center of the Photograph

The longest one was 2,063 ft., located three miles west of Sage creek viaduct. A tunnel 250 ft. long was driven near the top of the ascent from Arrow creek on the south side. The other four tunnels were located within a distance of 3 miles, near Belt creek viaduct.

The methods adopted in driving these tunnels varied somewhat. At Sage creek, where a wet shale was encountered, a full arch section top heading was driven, and the bench then removed, all excavation being done by hand. Work was pushed from both portals, and also from two shafts. In most of the other tunnels a center bottom drift was first driven and the remaining material was then trapped into small cars. Tunnels 1 and 5 are on tangent, while tunnels 3 and 4 are on 8 deg. curves. Tunnel 6, 780 ft. long, is on an 8 deg. reverse curve with 150 ft. of intermediate tangent. All tunnels were lined with concrete before the road was turned over for operation, excepting the Arrow creek tunnel, 250 ft. long.

appears to be entirely arrested during a rainy season. The underlying cause for the movement has not been definitely determined. An examination of several smaller slides in the vicinity has shown that they rest on a shale which crumbles after exposure to the air for five or six months, and that this disintegration ceases about 10 ft. from the face. One theory advanced is that the crumbling of this shale allows the material above to settle and in this way starts it moving.

To arrest this movement, sliding material was transferred from the upper to the lower side of the railway embankment by steam shovels in an attempt to equalize the weight. This effort proved successful in June of last year, the slide discontinuing movement, but for purposes of safety and to allow the material ample time to gain a dependable equilibrium, a shoo-fly track skirting the hill has been built for train operation, and no attempt will be made to operate trains on the original alignment before next summer. Owing to the geological formation pecu-

liar to this section of the country and chiefly to the widespread presence of shales subject to rapid air-slaking disintegration, a number of similar slides of lesser magnitude have developed, notably on the Arrow creek hill, which have been arrested in the manner outlined above.

HAULING MATERIAL

The most interesting feature in the construction of this line was the bridge work, which was estimated to cost \$1,700,000. This included 5 high steel viaducts, 14 arch culverts, and numerous smaller openings. The bridge work was handled by company forces from its inception to completion.

It was necessary that all the culverts and substructures for the viaducts be built in advance of the grading, to enable the line to be completed at the earliest possible date, and, as a result, the material for these structures had to be hauled in wagons from the nearest railroad stations, sometimes as far as 30 miles distant. Over \$100,000 was paid for this item of hauling alone.

Material required on the east end of the line was unloaded at a temporary spur 2½ miles east of Glengarry, a station on the

the cars into the wagons. He issued triplicate tickets for each wagon load, showing the contents of the wagon; he retained one of the tickets, one was given to the teamster and one was sent to the office of the engineer in charge of the work to which the material was going. The teamster handed his tickets to the contractor, and once each month the contractor and the various engineers checked their accounts, after which the teaming bill for the month was made up. Under this system not a single controversy arose between the contractors and the engineer in charge, nor was any material lost.

The hauling was done with traction engines and teams. When the roads were good, traction engines would haul two Buffalo-Pitts wagons of 20 tons capacity each, doubling the hills by dropping one trailer. As many as 750 sacks of cement could be hauled in this way at one trip, requiring 14 hours for 24 miles. On this short haul the engines would make the trip during the day, returning to the railroad in the evening, and the wagons would then be loaded at night. However, these engines could not be operated across the adobe flats during wet weather, and about 150 horses were required at Glengarry and a similar number at Swift and Wayne. These horses were generally operated



Sage Creek Viaduct

Milwaukee road a short distance east of Lewistown, while that required at the west end was hauled in from Swift and Wayne on the Great Northern.

This hauling was let by contract to local freighting contractors. At Glengarry the contractor received 35 cents per ton-mile, and 35 cents per 1,000 ft. B. M. for lumber, hauling all the material required for the first 30 miles of the line out of Lewistown, which included the substructure material for three of the viaducts. On this contract the railway company handled all material at the siding and loaded all wagons. The average haul was 12 miles. At Wayne and Swift, where the average haul was 14 miles, the contractor was paid 50 cents per ton-mile, and per 1,000 ft. B. M. for lumber. Here, however, all loading and unloading of material and payment of demurrage charges were cared for by the contractor.

A material clerk was stationed at the unloading point on the railroad, and he checked all material as it was unloaded from

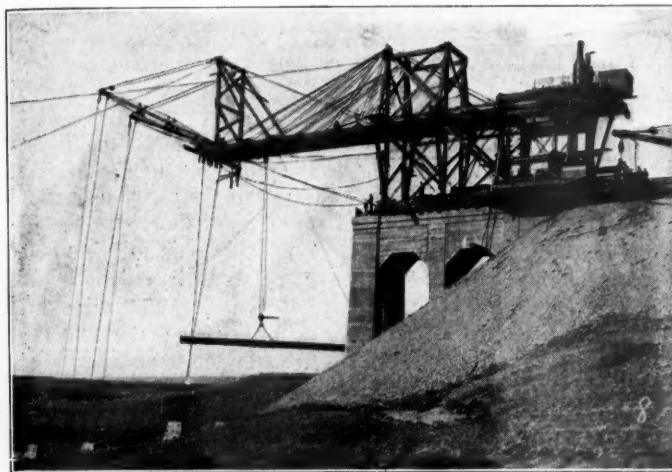
in "four- and six-up" teams, but at times as many as 14 horses had to be used to transport such heavy equipment as hoisting engines. As would be expected in a new country, the hauling of these large quantities of material required the construction of a considerable mileage of new roads, all of which were built and maintained by the contractors with the co-operation of the railroad.

CULVERTS

The larger culverts were constructed of reinforced concrete of parabolic-arch cross section. These were constructed with the use of wooden movable forms made in sections 16 ft. in length, and the work was handled in such a manner that after a start was made, almost all stages of the work were in progress at the same time. One of these culverts was a double 20 ft. by 15.5 ft. arch under a 60 ft. fill. One 10 ft. arch was built under a 65 ft. fill and a 16 ft. arch was placed under an embankment 102 ft. high. Because of the high freight and teaming charges on cast-iron

pipe, careful attention was given to the selection of the materials for small culvert openings up to 42 in. in diameter. For fills up to 6 ft. in height American Ingot Iron and Acme Nestable corrugated iron culverts were used. For fills higher than 6 ft., cast-iron pipe was used for the most part, although after establishing a concrete pipe plant at Great Falls, concrete pipe was substituted for cast iron in those openings remaining on the line to Lewistown, and for all openings on the Chouteau extension. About 1,275 tons of cast iron, and 3,000 lineal ft. of corrugated iron pipe were used on the Lewistown line.

The concrete pipe plant at Great Falls was a field plant, erected for this one piece of construction alone. Four sizes of pipe, 24 in., 30 in., 36 in. and 42 in., were made at this yard. The concrete was mixed, depositing in the forms was done by hand, the



Traveler Placing the First Steel at Judith River Viaduct

concrete being delivered to the forms in steel dump cars. During warm weather the inside forms were removed in four hours, while the outer forms were taken off the following day, all forms and pipes being handled by a traveler moving on a track spanning the working platform. In order to keep up the output in cold weather, live steam was turned into the interior of the inner form, which enabled the inner form to be removed almost as soon as in warm weather. Fourteen men and a foreman made nine pipes regularly every day at the beginning, and the output was later increased to 12 per day by the addition of other forms. This included all work, such as removing the forms, preparing the reinforcement, etc. Wooden forms were used for making the pipe.

VIADUCTS

The largest single structure on the line is the Judith river viaduct, 14 miles northwest of Lewistown, which is 1,953 ft. 10 in. long and 135 ft. high. This one structure required 2,829 tons of steel, and cost \$300,000. It consists of 46 ft. 6 in.-towers and 69 ft. 6 in.-intermediate deck spans supported on concrete pedestals, with large concrete abutments at each end. The viaduct was designed for Cooper's E-60 loading, and is provided with a ballasted concrete floor. One interesting detail of the design is that no horizontal bracing is used in the towers. The high abutments are of the type developed at the time of the construction of the coast extension, and described previously in these columns. (See *Railway Age Gazette*, October 27, 1913, page 839.) The east abutment is 65 ft. high above the top of the footing.

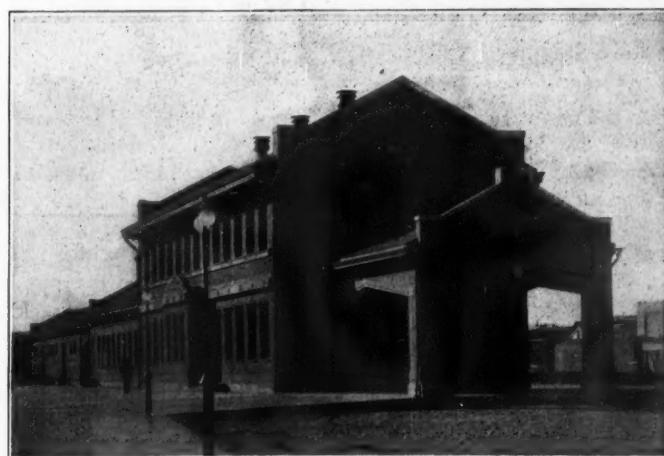
About 5,000 cu. yd. of concrete was required in the abutments and pedestals at the crossing. As this concrete was placed in advance of the grading, that for the west abutment was placed by means of a tower, while at the east abutment a trestle was run out from the adjacent bank. The pedestals on the side hill were built by delivering the concrete into the forms by spouts leading from the mixer set farther up the hill. In constructing

the pedestals across the flat area in the center, a trestle was built and the mixer moved out over each in turn, going out on one side of the structure and returning on the other. With these arrangements one mixer delivered about 150 cu. yd. of concrete per day. Sand and gravel were delivered to the work in wagons from a nearby pit opened for the purpose.

No steel was erected until after the track laying had reached the bridge site. The erection was accomplished with a large traveler of the type developed by the Milwaukee several years ago, and first used in the construction of a high viaduct at Tekoa, Wash., in 1908. The traveler is shown setting the first steel at Judith river viaduct in one of the accompanying photographs. The material was delivered to this traveler by two work trains, each provided with a derrick car. A force of 100 men, including the derrick crews, erected and riveted about 100 tons of steel daily. The entire 33 spans were erected in 31½ working days of nine hours each.

At Indian creek a viaduct 1,302 ft. 10 in. long and 150 ft. 6 in. high was built. This structure required 1,803 tons of steel and about 3,000 cu. yd. of concrete. Sage creek viaduct is 1,698 ft. 2 in. long and 156 ft. 6 in. high, and contains 2,735 tons of steel and 7,000 cu. yd. of concrete. These structures are four and ten miles west of Judith river viaduct, respectively, and are practically identical in design and construction with that structure. At Sage creek some difficulty was encountered with foundations, and 1,600 piles were driven under the pedestals. The 22 spans at Indian creek were erected in 22 days.

The two remaining viaducts are about 20 miles east of Great Falls. Red coulee viaduct is 675 ft. long and 137 ft. high, requiring 916 tons of steel and 2,400 cu. yd. of concrete. It was possible here to deliver material on top of the bench above the coulee at both ends of the structure, and this made two setups of the concrete plant necessary, one at each abutment. For each setup, two light rail industrial tracks were laid on a trestle, built just high enough to enable concrete to be delivered to the pedestal forms, out to a point midway of the viaduct. By means of a cable on a specially designed drum, a loaded steel dump car was made to pull an empty car up to the mixer. With this layout concrete was taken from the mixer as rapidly as it could be mixed, and both lines of pedestals were concreted simultaneously.



The Passenger Station at Lewistown

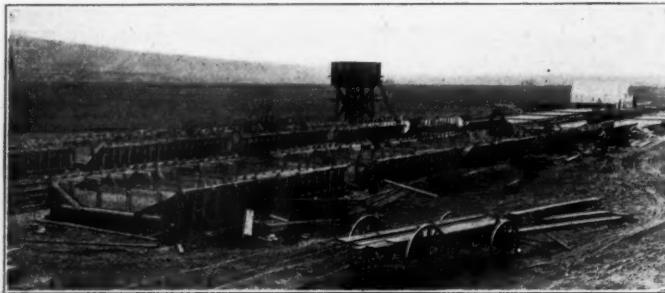
Belt creek viaduct is 651 ft. 10 in. long and 189 ft. 6 in. high, and contains 1,002 tons of steel and 2,000 cu. yd. of concrete. At this point the concrete material was delivered to the site in the bottom of the canyon and the concrete had to be raised by various means. Industrial track on low trestles, upon which 18 cu. ft. steel dump cars were used, enabled the concrete to be placed in the pedestals lying between the bases of the high cliffs. To place the concrete in the pedestals, situated high up on the west cliff and the west abutment, a timber skidway and bucket were devised. The bucket was drawn up or down the

skidway by means of a hoisting engine and was made to dump automatically at any desired point by means of a specially arranged timber yoke. The west abutment was poured by means of a bucket operated with a stiff leg derrick mounted on top of the cliff near the abutment.

The steel in Belt creek and Red coulee viaducts was erected by means of derrick cars. At Red coulee no difficulty was encountered, but at Belt creek tunnels adjacent to the ends of the viaduct necessitated the delivery of the steel by the work train inside of tunnel 6, from which point the erection derrick had to secure it. This slowed up the erection somewhat, but it was accomplished in 15 days.

The concrete deck slabs for these viaducts were built in two yards, established for the purpose. Those for Judith river, Indian creek and Sage creek were made on a level piece of ground just east of Judith river and adjacent to an adequate supply of gravel in a pit which was opened to supply material for viaduct substructures. In the gravel pit, at the extreme east end of the slab yard, was placed a loading trap, and from this trap a light rail track extended the entire length of the yard. Parallel to this track a standard gage track was laid upon which the concrete mixer was operated. The mixer was placed upon a raised timber platform, mounted on trucks, its height being such as to enable the concrete to be delivered directly to the slab forms by spouting. Gravel and cement were delivered to the mixer in steel dump cars, operated by a hoisting engine and cable, and the mixer was moved along its track as the slab forms were filled. The gravel was loaded at the trap with fresnos.

The forms for the slabs were built in sections so that they



Concrete Slab Yard Near Judith River Viaduct

could be easily removed, as soon as the concrete had set, and placed again for other slabs. The reinforcing was assembled to form complete units for one slab to avoid assembling the steel in the forms. More than 1,200 slabs, 3 ft. 4 in. to 4 ft. 10 in. wide, were built in this yard, with an average of 25 slabs built per day for the entire time the plant was in operation.

The second slab yard was established just west of Red coulee, where the deck slabs were made for Red coulee and Belt creek viaducts. The space was so limited at this point, due to the topography, that it was necessary to build half of the slabs on top of the other half. This, together with the fact that the gravel had to be hauled in wagons a distance of three miles, reduced the average daily production of slabs to 18. For this yard the mixer was stationed at the point where the gravel was delivered by wagons, and the concrete was delivered to the forms in steel dump cars, operated on a light rail track.

Immediately after the steel was erected at the viaducts, the slabs were loaded onto flat cars by means of derrick cars, taken to the structure sites, and put into place by the derrick cars. On the average, 40 slabs were placed per day during the time that the work was in progress.

TERMINALS

At Lewistown, where several lines of the St. Paul enter a 12-stall roundhouse, 96 ft. deep, was built, together with a power house, machine shop, oil house, rotary sand dryer, storehouse, and office building, all of which are of brick construction. A

170-ton mechanical coal hoist of timber construction, C. M. & St. P. standard clinker pit, 225 ft. long, and a 67,000-gal. water tank, were also provided, in addition to the usual small buildings.

At Great Falls a 9-stall engine house, 96 ft. deep, a power house, an oil and tool house and a sand drying house of brick construction were built, and an air-operated coal dock of timber, a water tank identical with that at Lewistown, and a clinker pit 150 ft. long were provided. For the water supply of this engine terminal, a triplex pump, direct-connected to a 10 hp. a. c. motor, was installed on the bank of the Missouri river, from which water is pumped a distance of one mile and raised a height of 268 ft. to the water tank through 6-in. cast-iron and wooden water pipe. All machines in both terminals are operated electrically.

PASSENGER AND FREIGHT STATIONS

Various standard and special designs were used for the passenger and freight stations along the line, all of which are of timber construction. At Lewistown a brick passenger station building, 273 ft. long and 24 ft. to 36 ft. wide, with shingle tile roof, art marble floor and tile wainscoting, and timber beamed ceiling, was built. A portion of the building 81 ft. long and 36 ft. wide is two stories high, on the second floor of which is provided room for division offices. The building also houses a lunch counter for which space 58 ft. by 26 ft. is assigned. All platforms about the building are of concrete and these are lighted by electric lamps, mounted on iron lamp posts, with two 50-watt lamps enclosed in 10-in. frosted globes on each post, and lights placed beneath the building cornice. A novel feature of the building is the C. M. & St. P. trademark in mosaic, placed in the gables and illuminated by reflecting lamps.

The freight house and office building at Lewistown is 302 ft. by 32 ft., of which space 70 ft. by 32 ft. is used for the office. This building is one story high and of brick construction, with concrete floors.

At Great Falls it was very desirable to locate the freight station near the center of the business section, and to accomplish this the area occupied by the city's restricted district was purchased and all the buildings were razed prior to beginning construction. Here a building 469 ft. by 40 ft. was constructed of brick, with concrete floors and basement. One end of this building, 40 ft. by 49 ft. two stories high, contains the local offices of the company. The passenger station at Great Falls, a brick and concrete building 207 ft. by 46 ft., two stories high, has art marble floors, tile wainscoting, Spanish tile roof and coping and plaster beam ceilings. An indirect lighting system is employed. At one corner of the building is a tower 135 ft. high, near the top of which is placed the Milwaukee trademark, made of terra cotta and illuminated with flaming arc lamps. The station platforms are of concrete, lighted in the same manner as at Lewistown, except that there are no cornice lights about the building. Instead of these there are a number of arc lamps on the walls of the building and numerous incandescent lamps about the ornamental iron marquises.

BOARDING CAMPS

As all bridge work was handled by company forces, it was necessary for the railroad to arrange to feed these men. This was done by organizing a commissary department directly, instead of bringing in a boarding contractor. Each camp was placed in charge of a camp clerk with the usual number of cooks and assistants, reporting direct to the engineer's office at Lewistown. Each clerk was allowed to order the food he desired for his camp by telephone from the Lewistown office, one clerk assembling the orders from these various men and then buying in large quantities, and locally as far as possible. At the end of each month an inventory of the supplies on hand at each camp was taken and the actual cost of the meals was computed. A circular letter was then sent to all camps, giving the cost per meal at each camp, with the names of the assistant engineer, the clerk, the foreman and the cooks. It was found that this public

comparison stimulated considerable interest among the men in securing the best food at a low cost. The men in each camp were charged a uniform rate per day, which was deducted by the timekeeper in the usual manner, although this rate varied somewhat in the different camps, depending upon the class of camp; that is, skilled mechanics desired better food than did the laborers and paid a correspondingly higher rate. An average of about 550 men were fed in this manner, at as many as nine different camps. The camps were not run for profit, but were managed so as to be self-sustaining, while endeavoring to give the men the best possible food for the money paid, two direct results being that the company camps held their men on the work and there was a very small amount of sickness. There was no typhoid fever in any of the company camps, although other camps along the line were not immune.

The track was laid by hand from Lewistown to Sage creek crossing. North of this point a Roberts track-laying machine was employed. Seventy-five pound rail was laid on sawed ties fully tie plated and in gravel ballast. Stations were established at intervals of 8 miles, with a house track 1,500 to 2,000 ft. long at each station, and a passing track at each alternate station. Water is secured from streams in most instances, although a gravity supply is secured from one spring at Highwood, and a deep well was driven at Pownal, near the crossing of Arrow creek.

The construction of this line was started in July, 1912. The track laying was completed last spring, and irregular freight service was inaugurated as far as Great Falls about May 15. Local passenger service was started on August 10, and it is expected that through passenger service will be started soon. The grading on the Choteau line has been completed, but no rail has been laid.

The construction of this line was handled under the direction of Charles F. Loweth, chief engineer, and E. O. Reeder, assistant chief engineer. F. J. Herlihy was assistant engineer in charge of all masonry, steel, superstructure, and building work until October 1, 1913, when he resigned to accept service with another company, and was succeeded by F. B. Walker. A. G. Baker was division engineer in charge of grading and water supply work. Assisting him were district engineers C. D. Jackson, W. R. Felton and J. D. McVicar, each of whom was in charge of five resident engineers. C. L. Whiting, superintendent of construction, had charge of track laying and ballasting. Twohy Brothers, of Portland, Oregon, were the contractors for the grading of the Great Falls terminals and for the first 70 miles of the line out of Lewistown. Winston Brothers, of Minneapolis, had the contract for grading the intermediate portion. All other work was done by company forces.

TRAIN INDICATORS AT EUSTON STATION

In the terminal station of the London & North Western at Euston, London, the train indicators, showing the times that outgoing passenger trains will start, are mounted in cases standing on the floor, an arrangement which brings the reading matter into the best possible situation for the convenience of passengers seeking information. There are four of these indicators at Euston, and one of them is shown here-with. Indicators of the same kind are in use at Crewe, Liverpool, Manchester and other important points on that road.

The lettering is black, printed on white paper, the sheets of paper being pasted on a continuous apron or curtain of white canvas. The curtain is carried on rollers and is rolled on to the upper roller and off the lower one as occasion demands, the practice being to show at all times every train that is scheduled to depart within the next hour, or thereabouts. The lettering on the case, above the white space, not clear in the illustration, shows that the bold-face figures in the column in the right hand margin of the curtain indicate the number of the platform at which the train stands. At the top of the case, opposite the index fingers, the passenger

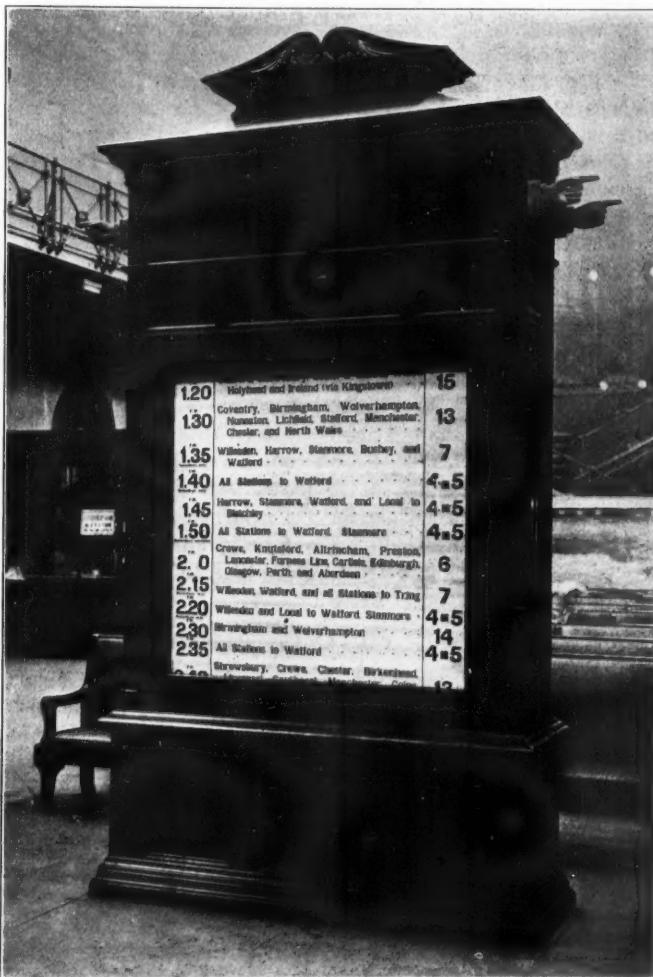
is informed which platforms are at the right and which at the left.

It is to be noted that four of the trains among the eleven here shown are run on Saturdays only, while a fifth, that leaving at 1:50, runs every day except Saturday. This condition suggests that a different sheet, with these Saturday trains left out, might well be used on the other days of the week.

New sheets are usually printed twice a year. When it is necessary to make changes at other times, narrow slips are pasted over the lines which are superseded.

For the foregoing information and for the photograph, we are indebted to L. W. Horne, superintendent of the London & North Western, London.

Readers desiring to make comparisons with American prac-



London & North Western Train Indicators

tice will find the indicators recently put up at Kansas City and at Memphis, described in the *Railway Age Gazette*, February 12 last, page 272, and those used at the Pennsylvania and the Grand Central stations in New York City in the issue of February 14, 1913, page 296. An indicator arranged on the same general principle as that at Euston, but different in some particulars, is in use at Charing Cross, London. This was described in the *Railway Age Gazette*, December 12, 1913, page 1122. The indicators at the Central station, Glasgow, Scotland, unique in some respects, were described August 9, 1912, page 255.

THE ANTUNG-MUKDEN RAILWAY.—At the conference between the Chinese and Japanese representatives in Peking on March 10, the Chinese agreed to an extension of the Antung-Mukden railway agreement, which expires in 1923, to 99 years.

Hearings on Western Freight Rate Advances

Testimony of Railway Men Concluded, Protestants Begin Presentation of Case in Opposition to Advances

The Western railways practically completed the introduction of their direct testimony as to the reasonableness of proposed advances in freight rates on a number of commodities in Western Trunk Line and Southwestern Tariff Committee territories on Monday of this week, and on Tuesday representatives of the protestants and interveners began the introduction of their evidence in opposition to that of the railroads. Four days were allotted for general evidence in rebuttal of the general and financial testimony presented by the railways at the beginning of their case. This is to be followed by the introduction of evidence bearing on the specific commodity rates involved in accordance with a schedule similar to that which was followed in the presentation of the railways' case.

March 23, 24 and 25 were devoted to the introduction of evidence on behalf of the railways as to their reasons for advancing rates on coal. March 26 and 27 were devoted to the rates on fruits and vegetables, and March 29 to the increased rates on rice and rice products. Some testimony which was not finished on the days allotted for it will be introduced later.

C. C. Wright, general solicitor of the Chicago & North Western, and chairman of the committee in charge of the case for the roads, said that the carriers would need perhaps four days for odds and ends of evidence not yet introduced. Mr. Thorne requested that the carriers be required to finish their direct testimony before the protestants offered their general rebuttal, and when Commissioner Daniels refused to permit the departure from the schedule, he registered a formal protest. He asked for a postponement of 10 days. The commissioner announced a tentative schedule for the evidence to be introduced by the protestants, which provides for the introduction of unfinished evidence by the carriers on April 3 to 8, following the general evidence of the protestants.

COAL RATES

Eugene McAuliffe, general coal agent of the St. Louis & San Francisco, testified on March 23 and described the advances in coal rates asked and the territory affected. He presented a statement representing one year's business based on an actual check of way bills in seasons of both rush and slack traffic on roads which originate 86.5 per cent of the coal originating in the territory.

The average weighted haul, Mr. McAuliffe said, is 303 miles, while the average gross revenue is \$1.48 per ton under the present rates. This yields 4.89 mills per net ton-mile or 3.42 mills per gross ten-mile, while if 90 per cent of the empty return haul is included, the revenue is only 2.84 mills per gross ton-mile. The average increase asked is 7.95 cents per ton, which would add .262 mills per net ton-mile, .183 mills per gross ton-mile, and .145 mills per gross ton-mile if 90 per cent of the return haul is included.

The total amount of the proposed increase on roads embraced in this tabulation, he said, is \$1,080,286 per year. Including all roads affected the total additional revenue per year would be \$1,226,122. This represents an increase of only 5.36 per cent and would entail an addition of 5.37 cents per capita yearly to the expenses of the population in the states affected. Participating in the increase are 121 roads, operating 131,053 miles of line. The increase would add to the revenue of these roads \$9.36 per mile yearly.

Mr. McAuliffe testified that the advance applied from mines in Illinois, Indiana, Missouri, Iowa, Kansas, Arkansas and Oklahoma and some from western Kentucky and Alabama to Iowa, Wisconsin, Minnesota, North Dakota, South Dakota, Nebraska, Missouri, Arkansas, Kansas, Louisiana, Texas and Oklahoma. He presented a complete tabulation for a one-year period cover-

ing 118 cities, showing the average haul to each, the tons of coal consumed in a year, the average rate per ton, the gross revenue received on the existing basis, the average increase per ton and the amount of increase which would be felt by each city during the course of a year.

The popular mind and the railroad baiter should be disabused of the idea that coal, with its heavy carloads and heavy trainloads, is a necessary foundation to railway traffic, said Mr. McAuliffe. It is often said that the railway should haul coal at any price and make its profit on hauling other products. That is not true. The coal movement is spasmodic. Instead of being adapted to filling out our trains, it monopolizes almost our entire facilities at the worst season of the year, the time of cold weather. Other traffic falls off, but bad winter weather means fuel and lots of it. There is not a road but must not only stand prepared to take care of the maximum normal requirements of the winter season, but also must carry enough potential transportation ability to take care of abnormal conditions in unusually cold weather, or when a coal strike is impending. Railways must keep a tremendous amount of equipment for the sole purpose of taking care of a peak in traffic which lasts only three months a year.

On one road alone the bituminous coal hauled amounted to 30.52 per cent of the total revenue tonnage, yet this paid only 11 per cent of the total freight revenue. There is an immense fluctuation in extremes of coal traffic. If we take the minimum month on 16 roads as 100 per cent, the maximum month is 289.13 per cent. On other commodities the extremes are only the difference between 100 per cent and 152.39 per cent.

Coal is not carrying its share of the burden for many reasons. First, there is an enormous empty haul, the percentage of empty cars to loaded cars being nearly 100 per cent. Secondly, there is the tremendous spread in the volume of business, with commissions, states and courts all demanding that we be equipped for the maximum. Thirdly, weather changes or an impending strike may increase the consumption of coal over night by 25 per cent, at the same time the transportation ability of the roads is cut 50 per cent. The cost of assembling coal alone in the southwestern territory runs as high as 18.1 cents in Arkansas, while the lowest cost, in Kansas, is 8.2 cents per ton. This represents the cost to the railway of maintaining switch engines at the mines, the placing of empty cars, movement of loaded cars to scales and gathering yards, to be picked up by main line trains, and the rental of coal cars while in mine territory. It does not include any interest charges or maintenance on the main line facilities used.

E. H. DeGroot, Jr., superintendent of transportation of the Chicago & Eastern Illinois, testified that the cost of assembling coal on his road in the southern Illinois district is \$4.39 per car, or 9.83 cents per ton. Of the total freight traffic of the road bituminous coal represents 54.17 per cent, but the revenue thereon is only 35.45 per cent of the total freight revenue.

Bituminous coal as a predominating article of freight is a liability rather than an asset to railways in the Central Western coal producing states, according to testimony presented by J. M. Daly, former general superintendent of transportation of the Illinois Central on the advance on coal from Illinois and Indiana fields. Daly's testimony related purely to the operating features of coal traffic. Western coal roads, he said, would have saved \$12,000,000 a year toward maintaining their credit if their car repairs could be held down to the level on the western non-coal roads. "From \$1,600,000 to \$8,000,000 invested in coal cars," testified Mr. Daly, "is standing idle every day, representing 2,000 to 10,000 cars a day which are not in use through nine months of the year. Bituminous coal requires cars which, in the West-

ern coal fields, cannot be used for other commodities, as iron ore, lumber, etc. In the East coal moves to the lakes and ore back, but out here the return haul is mostly empty. In the East, because of lake traffic, coal moves in the summer; out here it moves in the winter, when operation is most costly.

"Coal goes to the West, but none comes back. The few cars of scrap iron or gravel could be taken care of 10 times over with the empty cars which had gone west with company coal. If we hauled no commercial coal at all, we would still be hauling empty cars eastward. The empty coal car haul is 95 per cent of the loaded or bituminous coal on these Western coal roads, against an average of only 30 per cent on all freight, including coal."

"Every two years the mines close down or threaten to close down on account of labor disputes. This lasts from two to five months, causing more idle equipment. In January, February and March of these years everyone rushes to stock up on coal, anticipating a strike, so that not only must we furnish cars for the normal winter rush, but extra cars must be maintained because mine operators cannot agree with their miners."

To show that bituminous coal roads should receive a higher rate, Mr. Daly compared 11 roads originating nearly all the bituminous coal from Indiana and Illinois mines with 13 western roads not originating much coal and 10 eastern bituminous coal roads.

"These 11 roads," said he, "report 51 per cent of originated traffic as bituminous coal. Their ratio of operating expenses to revenues is 74.05 per cent. The 13 non-coal roads report only 8 per cent originated tonnage as bituminous coal. Their operating ratio is only 64.24 per cent. The 10 eastern roads report 66 per cent of originated traffic as bituminous coal and their operating ratio is 71.82 per cent.

"Four of the eleven western bituminous roads now are in receivers' hands and three are not paying dividends. The others are fortunate in having a large volume of other business to help them out. It is not a question of traffic density, but of inadequate rates.

"Cost of repairs and depreciation is 1.32 cents per car mile on these western coal roads, 43 per cent of whose cars are coal cars. On the western non-coal roads, the cost is only 0.87 cents, because only 7.3 per cent of their cars are coal cars. On the eastern bituminous roads, 70 per cent of whose cars are coal, the cost is again 1.30 cents. If the western coal roads had the same car repairs as the non-coal roads, the cost would be \$12,000,000 per year less.

"Even under proposed rates the proper burden would not be put on coal. There is no doubt that there is a big coal traffic and that it is growing, but there is no money in hauling it at present rates, and the more a road hauls the more it loses."

How rates on bituminous coal in the West have undergone a gradual reduction because of the competition between shipments from western mines and coal from the eastern states via the Great Lakes, was described by F. B. Townsend, traffic manager of the Minneapolis & St. Louis. Mr. Townsend's testimony dealt with the history of coal rate adjustments from the mines in Illinois and Indiana to destinations in Iowa, Minnesota and South Dakota, outlining the competitive conditions which fixed the rates.

"Since 1901," said Mr. Townsend, "there has been a gradual reduction in coal rates to points of destination in these several states and the general level of rates is much below the basis which prevailed in 1901. The advance of 10 cents per ton proposed would not restore the rates to their former basis. For instance, the rate from Peoria to Hanley Falls, Minn., on August 1, 1901, was \$3 per ton. On October 6, 1903, this was reduced to \$2.25. On August 6, 1906, it was cut further to \$2.10. On October 29, 1906, it went down to \$1.80, which has prevailed to the present time. The proposed advance would add 10 cents, making it \$1.90, only 63 per cent of the rate prevailing in 1901.

"The present adjustment to eastern Iowa and southern Minnesota originated with the adjustment to the Twin Cities and

a desire on the part of Illinois lines to reach that market in competition with eastern coal moving from the docks at Duluth and Superior. Duluth and Superior receive annually from 7,000,000 to 9,000,000 tons of soft coal shipped into Minnesota, South Dakota and northern Iowa, a very large tonnage finding a market at the Twin Cities.

"Prior to 1889 the rate on soft coal from northern Illinois to the Twin Cities was \$2, and from Duluth \$1. These rates were gradually reduced by force of competition between the carriers from northern Illinois and the carriers from Duluth to the Twin Cities, until the rate finally settled, in 1904, to \$1.40 from northern Illinois, and 90 cents from Duluth to the Twin Cities. This continued and became the maximum at the intermediate points until December, 1910, when a general advance of 10 cents was made in rates from northern Illinois to intermediate territory in Iowa and Minnesota, but no advance in the Duluth-Twin Cities rate was made, pending decision by the United States Supreme Court of the Minnesota rate case. After the Minnesota rate decision and upon passage of the new rate law in Minnesota, the Minnesota State Commission prescribed a new distance tariff under which the rate from Duluth to the Twin Cities was advanced to 96 cents per ton and following this the northern Illinois rate was advanced to \$1.50 per ton.

"It is now proposed to advance the rates from northern Illinois to this territory generally 10 cents per ton with corresponding advances from the various coal fields in southern Illinois and Indiana, rates from which are fixed on a differential over the rates from northern Illinois. In making this adjustment no advance can be made in rates from Duluth to Minnesota points, as these are controlled by the Minnesota commission. Therefore, no advance will be made in rates from Lake Michigan ports to the same territory. The tariffs under suspension also propose a general advance of 10 cents to the western half of Iowa, to western Minnesota and to South Dakota east of the Missouri river."

The Interstate Commerce Commission set rates on coal in 1908 as high as those which southwestern railways now are asking, according to W. W. Miller, general freight agent of the Missouri, Kansas & Texas, who testified as to the advance of 10 cents per ton in the southwestern territory. Since then the rates have been reduced voluntarily by the railways in order to enable Oklahoma to get into Texas in competition with Colorado and New Mexico. This relationship, the witness testified, would not be disturbed, since the proposed advance is horizontal and would maintain the present adjustment of rates. Mr. Miller presented exhibits showing the present rates from fields in Illinois, Kentucky, Alabama, Arkansas, Oklahoma, Colorado and New Mexico to Arkansas, Oklahoma, Louisiana and Texas, showing the present rates to a number of points in each state and the average rate and the rate per net ton mile compared with Class E to the same points.

"Class E is the lowest classification," said he, "and comprises such articles as sand, brick, sewer pipe, etc., while coal is classified one class higher, in D. The coal commodity rate is only about half the class-rate on this lower class, E. From Texas, for instance, the average rate to some 30 points in Oklahoma with an average distance of 311 miles is \$2.32 per ton on lump and \$1.82 per ton on slack, the proposed rate being 10 cents higher in each instance, an advance of 4.31 per cent on lump and 5.39 per cent on slack. The average class E rate between those same points is \$4.63 a ton, just double the present rate on lump coal, although coal belongs to a higher class of freight. The disproportion between the coal commodity rate and its own proper classification, or Class D, would be even greater."

The witnesses on coal rates were cross-examined by J. H. Henderson, commerce counsel for the Iowa commission, and by a number of attorneys for coal interests. C. R. Hillyer, representing Illinois coal producers, said that the change would increase the discrimination between Illinois coal fields and the lake coal by 20 cents a ton, and asked Mr. Townsend if the Minneapolis & St. Louis would increase its revenue by the

change. Mr. Townsend said that it would lose some business to the Twin Cities, which it had retained only by sacrificing revenue on other traffic and that the net result would be to substantially increase its revenues. Mr. Hillyer insisted that the result would be to take tonnage away from the Minneapolis & St. Louis and give it to roads which were less in need of increased revenues. Mr. Townsend said this was true only in part of the territory. The witnesses were also cross-examined by M. O. Lorenz, statistician for the commission. Before the introduction of the testimony on coal Mr. Wright announced that the commission would be requested to allow the withdrawal of all tariffs providing for increases on anthracite.

FRUIT AND VEGETABLE RATES

J. S. Hershey, general freight agent of the Gulf, Colorado & Santa Fe, at Galveston, Tex., testified on Friday, March 26, as to the advances in rates on fruit and vegetables from Texas producing territory to interstate consuming destinations. The advance applies only on carload shipments and is 10 cents per hundred pounds on strawberries, 8 cents per hundred pounds on peaches and cantaloupes, 8 cents per hundred pounds on tomatoes and onions in straight or mixed carloads, and 5 cents per hundred pounds on cabbage, potatoes and watermelons. His testimony reflected generally the present and proposed rates from representative shipping points in Texas to points of consumption and was representative of conditions on all Texas lines.

"Earnings on carload shipments of strawberries from Alvin, Tex., to points in defined territory," said Mr. Hershey, "range from 14.6 cents per car mile to 19.3 cents, while on canned goods the earnings range from 17.5 cents to 26.1 cents, and on agricultural implements from 15.9 cents to 25.9 cents. This is based on the minimum weights of carloads of other commodities moving between the same representative points, and the actual weights would much exceed the minimum and result in a higher average earning. Yet based on these minima, the resulting earnings are thus higher than on perishable fruits and vegetables. The average loading of cars on practically all other commodities is greater than on fruits and vegetables. The loading on heavier articles is generally no less than 30,000 lb., while on fruits and vegetables it ranges from 17,000 lb. on strawberries to 24,000 lb. on heavier vegetables.

"Comparison of the proposed commodity rates on these fruits and vegetables with the classification and rates southbound which have been approved by the Interstate Commerce Commission, show that the proposed advanced rates are far below the approved class rates. On peaches, for instance, the proposed rate ranges from only 47 per cent to 65 per cent of the class rate.

"Based on the movement for 1914, even if every car originating in Texas moved to a point on which advanced rates were in effect, the total gross increase in revenue to all carriers for this traffic would be only \$135,000. In fact, however, probably not over 65 per cent or 70 per cent of the total would move to points where rates are advanced, the balance moving to points within Texas or points not involved. The total movement of fruits and vegetables from Texas in the three years 1912 to 1914 was about 40,000 cars. In 1914 the total was only 10,208, showing a falling off in the last year. This movement represents, in all probability, 80 per cent of the total movement from Texas."

L. M. Hogsett, general freight agent of the International & Great Northern, of Houston, Tex., testified regarding the nature of the transportation service rendered in handling these commodities. "Prior to the time of production," he said, "the railways must secure from every available source, information to enable an estimate of the period of production, the volume of traffic, the character and amount of cars needed and whatever other transportation requirements will be necessary. The crops require special equipment, as refrigerator cars and ventilated cars, which must be ordered and stored near producing points before time of shipment. As these cars are used to handle perishable freight throughout the United States, when the shipping season is starting in Texas this equipment has to be se-

cured from the principal market points and transported a great distance to the prospective points of production to await the crop. This causes unusual transportation conditions and heavy expense in furnishing cars.

"Even after cars are assembled, insects, rain or cold, or market conditions, may affect the time of shipment and the size of the crop so that carriers must be prepared to fit the car supply to any situation. Peculiarities of this traffic have caused many lines to construct special side tracks, loading sheds and other facilities costing considerable money and seldom, if ever, used for any other purpose. One Texas road 25 miles long has 24 spur tracks for loading of onions, which are idle 80 per cent of the year.

"Reconsigning and diversion instructions, after the cars are en route, are common and must be handled with extreme care and caution to avoid the various liabilities which fall upon the carriers. On one road which handled 2,795 cars there were sent and received 4,250 telegraph messages as a necessary incident to diversion instructions.

"The refrigerator cars principally used have a dead weight of about 10,000 lb. more than the box car of the same capacity. The ordinary refrigerator car capacity is only about 82 per cent of that of box cars of the same dimensions. Even with the light load, there is still this excess dead weight of 10,000 lb. plus about 5,000 lb. of ice."

RICE RATES

C. W. Owen, assistant general freight agent of Morgan's Louisiana & Texas Railroad & Steamship Company; J. D. Youman of the traffic department of the New Orleans & Northeastern, and D. R. Lincoln, assistant general freight agent of the Missouri Pacific, testified regarding the proposed advance on brewers' rice in carloads from New Orleans, interior Louisiana, Texas and Arkansas to St. Louis, Chicago and Milwaukee. This is the lowest grade of rice and the principal advance proposed is 5 cents per 100 lb. to St. Louis and 1/2 cent to Chicago and Milwaukee. The witnesses testified that the railways are now asking permission to advance rates which were originally made excessively low in order to develop the communities, and that based on the total yield for 1914-15, the total amount of revenue all the railways would receive from the advance would be \$18,500 per year.

OPENING STATEMENT BY CLIFFORD THORNE

Clifford Thorne, chairman of the Iowa Railroad Commission and of a committee of western state commissioners, and attorney for certain organizations of shippers, began the presentation of the case for the protestants on Tuesday with an opening statement. Heretofore, he said, the railroads have been better equipped than the shippers in cases involving rates, but in the present case the commissions of 16 western states have secured the services of an eminent corps of expert accountants and statisticians, and are looking after the interests of the public in connection with the representatives of the shippers.

He objected that, as indicating conditions in the territory, the testimony of only three chief executives had been introduced, the presidents of the Chicago Great Western, the Missouri Pacific and the Missouri, Kansas & Texas. The commission and the public know, he said, whether they represent typical lines or weaklings, and the protestants propose to show that three-fourths of the traffic in this territory is being handled by companies that are earning above all operating expenses and interest, from 6 to 16 per cent on all their capital stock. The present movement for increased freight and passenger rates, he said, involves several times the amount of money involved in "the famous Gould printing press scandal where they made Erie stock over night, which only involved some \$23,000,000."

The impression has been given that railroads have not been able to maintain their property during recent years. This is true as to some railroads, he said, but is untrue as to western railroads as a whole, and it would be shown that the western carriers expended in 1914, in maintaining their properties, \$2,800

per mile of line, which was greater than in any other year in their history, and that the railroads in western territory as a whole have expended in maintenance during the past five years an average of \$50,000,000 a year more than for any preceding five-year period since the first railroad was built in this territory. It would also be shown that the decline in percentage of operating income to property investment results from a change in the system of accounting and not from any operating condition.

The year 1914, he said, was one of world-wide business depression. In the exhibits to be offered on behalf of the protestants it would be shown that in 1913 the net revenues of the western railroads as a whole were the largest, with only one exception, 1910, since the first track was laid west of the Mississippi river; that the average net revenues during the past five years have averaged more than for any five-year period prior to 1913 in their whole history, and that the percentage return of net corporate income on capital stock outstanding in 1913 is more than double what it was 15 years ago, and five times greater than it was 25 years ago. It would also be shown, Mr. Thorne said, that the railroads have been charging many additions and betterments to operating expenses.

"President Felton of the Great Western frankly admitted on direct evidence," he said, "that practically one-half the cost of additions and betterments could be charged to operating expenses, and that very large sums were so charged during the past four years. President Bush of the Missouri Pacific admitted that large portions of the cost of rebuilding his road during recent years had been paid out of operating revenues and charged to expenses. Mr. Wetling, a witness for all of the railroads, made a similar admission, but was unable to state how much of that had been so charged. The magnitude of the sum involved may be grasped when it is noted that Mr. Wetling's exhibit shows that over \$700,000,000 have been expended in additions and betterments by these western railroads during the past seven years.

"It is safe to say that the cost of additions and betterments, amounting to several hundred million dollars, has been charged to operating expenses by these western railroads during recent years. So long as this practice is permitted to continue, it is going to be exceedingly difficult to determine just what are the net earnings of our railroads. When prosperity is at its very highest, the railroads can show the lowest net earnings, by simply building a larger amount of improvements and extensions, and charging large portions of this to operating expenses, thereby automatically reducing their net income.

"We are perfectly willing to pay the people these gentlemen represent an adequate return for their investment, such adequate return to include a reasonable surplus for tiding them over lean years, but we are absolutely unwilling to build their properties for them and then pay a return on what we build."

THE RAILROAD CRISIS: A WAY OUT*

BY RAY MORRIS

of White, Weld & Co., Bankers; Formerly Managing Editor *Railway Age Gazette*

It would perhaps not be too hasty a summary of American railroad policy to say that, from the earliest beginnings until the second Roosevelt administration, the roads were expected to be built, owned and operated by groups of private citizens acting under the minimum of regulative restraint. From about 1904 until the present time, however, experiments in regulation have gone forward so rapidly that we have fairly been swept off our feet by them, and at last have found ourselves committed to a policy of full regulation, state and national. Unfortunately, in the exercise of this regulation, we have failed to attach any responsibility to the full output of authority; we have provided an abundance of regulative statutes, part of which are administered by commissions and part by prosecuting attorneys, but we have nowhere provided

a commission, bureau, or department of the government charged with the contingent responsibility of seeing to it that railroad operation should remain profitable. As a matter of fact, during these years of house-cleaning, when our national back yard has been hardly large enough to contain all the linen, once soiled, which we have so newly washed and hung out to dry, we have not especially cared whether railroad operation was being profitable or not.

Consequently, when the war added its especial and heavy burdens to the roads last summer, we awoke suddenly to a realization of the fact that Europe, with some four or five billions of our railroad securities, had a lively interest in our railroad policy, or lack of one, and that if Europe was dissatisfied with it, our own distressed security markets might conceivably have a digestive task forced upon them quite beyond their capacities of assimilation. It is probable that not even the war shock has as yet made the nation realize how seriously the railroads are handicapped, or that regardless of the potential European selling, we simply cannot finance the annual railroad budget of about a billion dollars unless private capital, which has to do the financing, is satisfied with the security and profitableness of its investment. As Thomas F. Woodlock has well expressed it, the investor decides what return on capital is reasonable, not the Supreme Court.

Although I recognize that a certain amount of inefficiency is the price we pay for democracy, and that difficulties of just this sort (as well as the far more galling difficulties arising from state interference) are an unintentioned but essential adjunct to the rule of majorities, yet I believe that we are nationally capable of handling our railroad regulation a great deal better than this. It seems quite clear that the indicated remedy is to bring our scattered regulative efforts together; to do the regulating in an office where there is accompanying responsibility, instead of allowing the two things to be wholly unrelated, as they are today.

Without specific reference to the railroad situation, but as a solution for the evils arising from vesting the control of national business in a local-minded Congress, reinforced by the secret sessions of its own committees, Henry L. Stimson suggested last year, in an able address before the Law Academy of Philadelphia, that the members of the President's Cabinet should be given the right to appear on the floor of the House and discuss matters of general legislation affecting their respective departments. This simple change in procedure, which, as Mr. Stimson points out, is almost universal among other nations, and could be adopted without constitutional amendment, would give each government department a spokesman before the whole people and a national representative, by virtue of his position free from sectional influence, who could harmonize conflict and inconsistencies, and answer questions from the standpoint of the administration's continuous policy, now so often obscured and befuddled by a multitude of counsellors.

In the interest of constructive railroad regulation, suppose this accomplished; a further step would be the creation of a railroad department with a cabinet officer at the head. The secretary of Commerce, recently shorn of some of his duties by the creation of the labor department, might conceivably be able to add this heavy task to his functions, or it might well be better to create a new cabinet officer, to deal either with internal communications alone, or with rail and marine alike. The latter plan would perhaps be in line with a recent suggestion looking towards the establishment of an American minister of marine. Without the direct recourse to Congress, I think this plan could be only partially successful; with it, a great change in our helter-skelter system of administration of our great national interests might be worked almost overnight. The cabinet officer, concerned with the interest neither of the shipper nor of the carrier, but solely with the general good, could readily locate the points of maximum friction, and form his independent judgment as to the merits of conflicting

*From an Article Published in the Yale Review for April, 1915.

claims. As an impartial executive and expert in the service of the administration, he could set before Congress instances of inequitable burdens imposed by the states; or, better yet, he could act as an accredited go-between, to line up and harmonize the respective railroad policies of the states and the national government, without troubling Congress with the matter except as a last resort, and on questions of policy rather than of detail. In view of the extraordinary mixture of local and national legislation under which the railroads are compelled to operate, it is a curious fact that we have devised no intermediary system of communication.

To what extent work of this sort could be performed satisfactorily by a cabinet officer would probably depend a good deal on the personal characteristics of the men who attempted to do it. If the job were handled skilfully, it would develop its own traditions and gradually take its place as an accepted factor in the constantly enlarging machinery of national administration. I should feel sympathy and some concern for the first railroad secretary who tried to wean Texas from the home-industry rate-making habit, but the attempt would at least have the merit of being an advance in national economics over the present method of neglecting state regulative enactments until they become so flagrant that the Supreme Court is called upon for relief.

Recent events have sufficiently justified some of the early criticisms of the interstate commerce act, in holding that the combination of administrative and judicial functions vested in the commerce commission would sooner or later break down from its own weight and complexity. But the matter goes farther than that. The commission, an immensely thorough-going and conscientious body, has not only elaborated a slow, judicial procedure which is nearly the precise opposite of executive efficiency, but it has all the dread of a minor court, of stepping outside the narrow boundaries of its work. What can it do today, when the need is to relieve the railroads from real regulative oppression at a hundred points? It has no access to the state governments; if it had chosen to make a voluntary report to Congress covering suggestions for emergency relief, I believe the report would have been well received, both by Congress and the country, but the commission did not care to take its place as the single national representative of the roads; perhaps, even in the crisis, it felt the old duty to protect the shipper against the carrier.

How differently would this have been handled by a cabinet officer and his department, especially under the plan of direct access to Congress! The need of a spokesman would have been met automatically, and the effect on the public confidence would have been tremendous. Nor is there a single European country today, with the possible exceptions of Greece and Montenegro, where specific machinery has not been provided to meet railroad crises, and where there is not a regularly constituted bureau or office, having executive powers of its own, or accredited access to the government.

In England the Railway and Canal Commission, a body in many ways analogous to the Interstate Commerce Commission, judges of the reasonableness of the rates; but the Board of Trade, which is a branch of the government, formulated the maximum rate schedules of 1891-1892 for enactment by Parliament, and maintains a railway department which deals with privately owned and operated companies like our own, and is in every sense a national administrative body. In Germany, the *Bundesrat*, or Federal Council, made up of delegates appointed by the various states, maintains the *Reichs-Eisenbahnamt*, an executive office, and deals with matters affecting the empire as a whole; while the Prussian minister of public works, for example, is practically supreme in the local administration of Prussian railroad matters, working at the head of an elaborate system of councils and directories, so constituted that the advisory and consultative boards are carefully separated from the executive board. The minister of public works manages the state-owned roads and supervises the private-owned ones. In France, where private com-

panies own much the greater proportion of mileage, the minister of public works is similarly vested with executive authority supported by four permanent boards of committees dealing with various branches of the service, but deriving their authority from the public works office. Italy carefully separates the administrative functions of her minister of public works from the general national control exercised by the department of railways, headed by a permanent council of railway administration, which has nine members whose qualifications are described by statute. Private-owned roads in Italy constitute about fifteen per cent of the total.

In short, we find the commission, or consulting council, an essential part of the regulative plan all over Europe; but the tendency is equally plain to unite the specialized functions of these bodies in an executive office which exercises the authority and accepts the responsibility. The Prussian advisory councils, for example, were instituted with the express purpose of considering traffic and rate changes from the combined standpoint of the management and the public, but these councils do not possess the rate-making power; their suggestions are carried up through the district directories to the general advisory council, whose function it is to supply information and advice to the minister of public works. Sometimes this machinery has been over-elaborated, as in France, where the great commercial advisory board, which deals with minor rate changes, is headed by a permanent committee of 68 members, and works slowly. But provision has everywhere been made to deal with the railroads and their major problems in their entirety; we alone have failed to create a general railroad office with this function, although the need for it is much heightened in this country by our system of state autonomy.

It seems to me that it is our clear duty to supplement the careful and thorough, semi-judicial work of the Interstate Commerce Commission with such an office, and with an executive capable, as the commission is not capable, of appearing before Congress, or before the state governments, or of going from one to the other, with suggestions tending to increase efficiency, promote harmony, and settle abuses without the crude recourse to direct legislative action or the slow and unsatisfactory appeal to the courts: an appeal which takes so long that much irremediable damage is done in the meantime, while the final decision must necessarily turn on general constitutional and statutory rights, without much reference to the administrative necessities of the immediate case at hand.

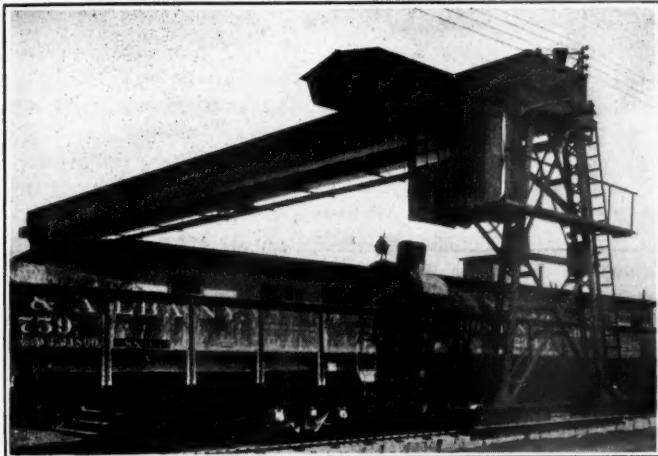
As an ultimate solution, it may well be that we shall come to some form of profit-sharing between the railroads and the national and state governments, either with or without a system of minimum guarantees. New York and Chicago have both worked out a plan of this sort to provide for local traction needs, and it has operated with great success and with conspicuous lack of friction. E. P. Ripley, president of the Atchison, Topeka & Santa Fe, goes even further than the municipalities have gone, and would divide the railroads into groups somewhat after the manner of the regional reserve banks, with a certain number of government directors, and with minimum guarantees of earnings and complete freedom to work out traffic pools, subject to government veto power in the public interest.

Before any constructive plan can be worked out, it will certainly be necessary to create an executive department at Washington to consider the situation in all its bearings. The planning will be a tremendous job, and it is quite obviously idle to look to the Interstate Commerce Commission or to the respective Senate and House committees on interstate commerce to undertake it. But it is fair neither to the capital which has built up the existing railroad system nor to the business interests of the country requiring its extension and development, that our national railroad policy should be permitted to remain in such a muddle, without plan or leadership, and holding out absolutely no inducement to build into new territory, or to rehabilitate and modernize the weak lines.

Plant for Handling Scrap on the Boston & Albany

Includes Reclaiming Shop and Storehouse. Material Is Unloaded, Sorted and Reloaded with a Gantry Crane

On January 1, 1914, the Boston & Albany put into operation at West Springfield, Mass., a new scrap reclaiming plant, and concentrated the handling of scrap for the entire road at this point. Prior to the completion of the plant scrap had been sorted and broken up by hand at several points on the system with little attention to reclamation of serviceable material.



Storehouse and Gantry Crane, Showing Crane Trolley Wires

Considerable material is now economically salvaged and the cost of handling the scrap has been much reduced.

The plant consists of a storehouse 25 ft. by 40 ft., with a connecting shed, 25 ft. by 50 ft., housing the reclaiming shop. A high platform, 10 ft. wide on the sides and 30 ft. wide on the

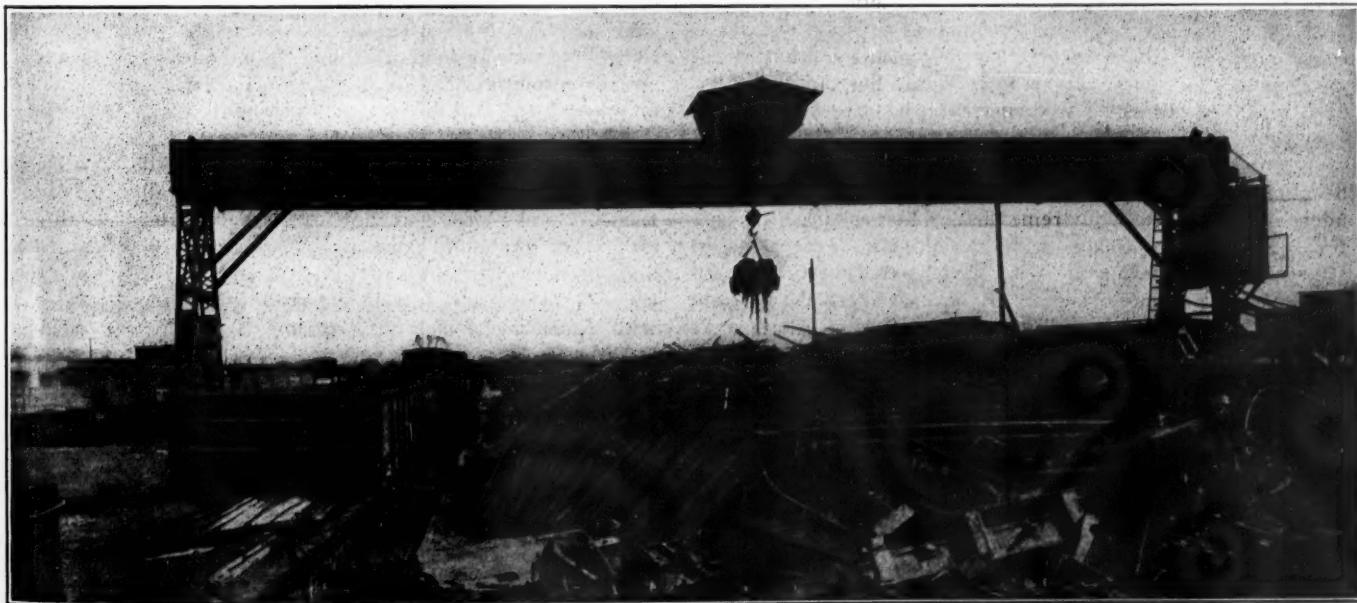
one on each side, and a five-ton gantry crane, running on rails laid on a continuous concrete foundation, spans the entire layout. The tracks are 47 ft. apart, center to center, and the span of the crane wheels is 80 ft.

The tools in the shop consist of a pair of alligator shears, driven by a 7½ h.p. motor; a drop hammer driven by a 7½ h.p. motor; a bolt threader and nut tapper, and one magnetic chip separator. These last mentioned machines are driven from a line shaft by one 7½ h.p. motor.

The gantry crane is of the standard three-motor type of five tons capacity. The maximum travel of the hook from lower to upper limits is 22 ft., and the clearance from the under side of the girders to the base of the rail is 22 ft. The main hoist is driven by a 22 h.p. motor and lifts at a speed of 40 ft. per minute. The trolley is driven by a 3 h.p. motor and travels at the rate of 125 ft. per minute. The bridge is operated on the rails by a 22 h.p. motor and travels 200 ft. per minute. All motors are for two phase, 60 cycle, 440 volt alternating current and were furnished by the General Electric Company. They are enclosed on the sides and top by galvanized corrugated iron with suitable doors for inspection.

The hoisting mechanism is controlled by mechanical load and electric brakes, and a limit switch is provided for opening the main current of the motor to protect the crane from injury should the hook be raised to a dangerous height. A powerful foot brake of the post type is operated by a foot lever located conveniently in the operator's cage, which is placed at one end of the bridge.

The lifting magnet is of 3,500 lb. capacity and has a lifting surface three feet in diameter. It is lifted by the hook of the crane, and when not in use is set on the platform. Direct current for the magnet is supplied by a 7½ kw. 230 volt General



Arrangement of Bins for Sorted Scrap, Boston & Albany Scrap Yard

end, extends around three sides of the building. Beyond the end of this platform at ground level is an area 45 ft. wide and 200 ft. long, on which the scrap is sorted. This is surfaced with cinders and screenings and is divided into 15 bins, 10 ft. wide, with a large bin 50 ft. wide in the center. Tracks for loading and unloading extend the entire length of the plant,

Electric motor generator set bolted on the side of the crane bridge girders and controlled from the cage. When loaded to its full capacity the magnet requires about 45 amperes at 230 volts.

The track on one side of the plant is used for unloading scrap as it is received and shipments are made from the other

side. Cars loaded with miscellaneous scrap are placed opposite the large central bin into which they are unloaded by the lifting magnet. The material is then sorted to meet the several specifications as to size, quality of material, etc., each class being placed in a separate bin and held for shipment. In this operation boxes 30 in. by 40 in. square with side bars 8 in. high on three sides are used. Each box is handled by a three-part chain sling, and when filled with sorted material is carried by the crane to the proper bin and dumped.

The power hammer in the reclaiming shop is used for straightening bolts and spikes. A special die has been provided by means of which three spikes may be sharpened at one time with a few blows of the hammer. Bolts and nuts are reclaimed by retapping and rethreading. All brass borings are run through the magnetic separator which removes steel and iron chips. The plant is provided with an oxy-acetylene outfit which is extensively used to cut up into sizes convenient for handling and shipping structural material, old boilers, tender frames and other large pieces.

At present the organization consists of 15 laborers, who are in charge of one foreman. The latter reports direct to the store-keeper and all reclaimed material is turned over to the stores department for disbursement on requisition. During the last eight months of 1914, 10,000 gross tons of scrap was handled by

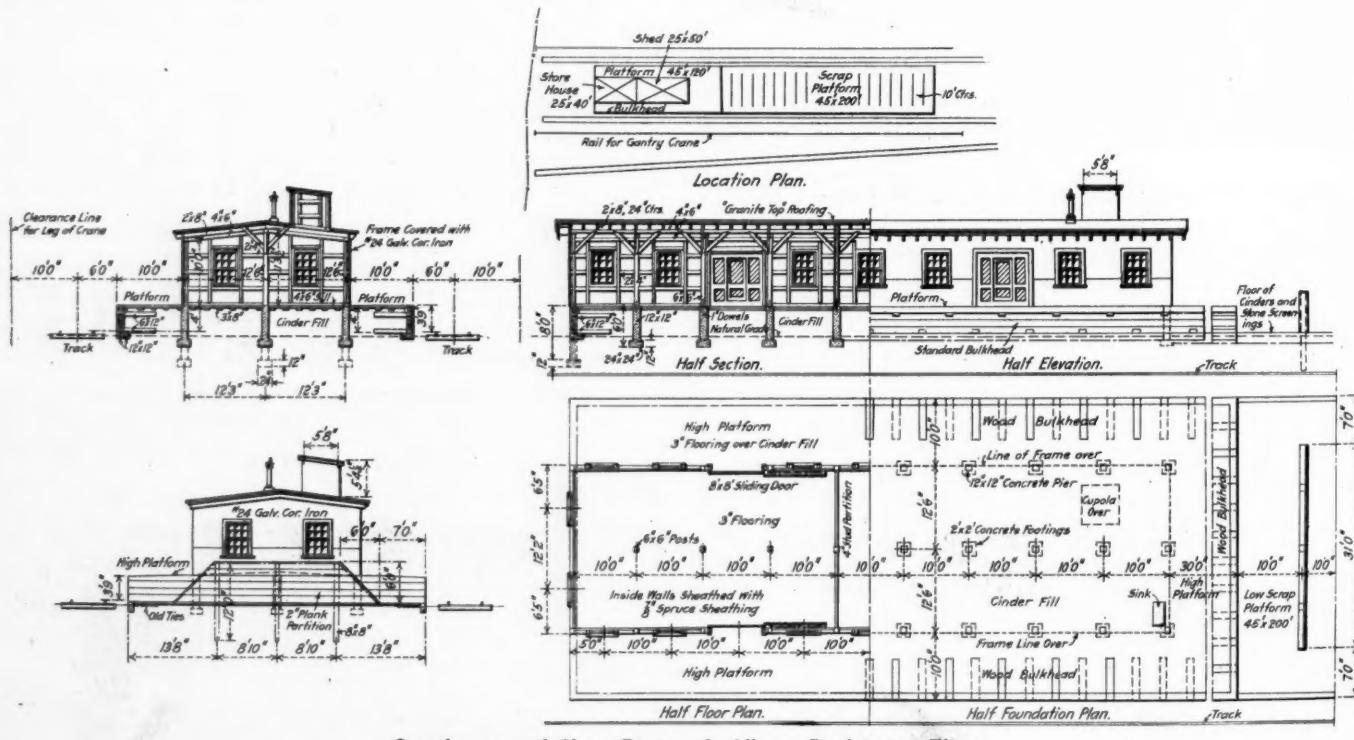
TRAIN ACCIDENTS IN FEBRUARY¹

The following is a list of the most notable train accidents that occurred on railways of the United States in the month of February, 1915:

Collisions.					
Date.	Road.	Place.	Kind of Accident.	Kind of train.	Kil'd. Inj'd.
†1.	Cin. G. & P.	Amelia, Ohio.	bc.	P. & F.	3 13
2.	Penn.	Irving.	rc.	F. & F.	1 5
9.	N. Y. Central.	Cayuga.	bc.	P. & F.	0 3
9.	Louisville H. & S.	Irvington.	bc.	P. & P.	0 1
28.	A. C. L.	Dillon, S. C.	rc.	P. & F.	0 1

Derailments.					
Date.	Road.	Place.	Cause of Derailm't.	Kind of train.	Kil'd. Inj'd.
5.	Balt. & Ohio.	Beardstown.	d switch	P.	0 11
7.	Balt. & Ohio.	Greene Junc.	d. truck	P.	... ..
*10.	Missouri K. & T.	Hailey.	fire	F.	0 0
11.	Vicksburg S. & P.	Dubberly.	ms.	P.	0 2
19.	Balt. & Ohio.	Youngstown.	ms	F.	1 2
22.	Denver & R. G.	Colorado Sp'gs.	unx.	P.	2 11
23.	Southern.	Bristol.	d. truck	P. & F.	1 5
25.	Penn.	Morris Junc.	acc. obst.	P.	0 5
26.	Boston & M.	Claremont Junc.	washout	P.	1 3

The trains in collision on the Cincinnati, Georgetown & Portsmouth near Amelia, Ohio, on the 1st, were an eastbound pas-



Storehouse and Shop, Boston & Albany Reclaiming Plant

the plant, and material worth \$8,715 was reclaimed and returned to store stock. The value of the reclaimed material amounted to about \$139 per month in excess of the operating expenses, and during the eight months \$139,000 worth of scrap was sold. As compared with the previous method of handling scrap, a saving of 10 cents per ton has been effected by the new plant, and under the former method practically no material was reclaimed. The reclaimed material consists of brake shoes, brake pins, brake levers, connection rods, couplers, follower nuts, washers, fire hooks, bolts, spikes, side irons, tie plates, shovels, round and flat iron, etc.

The installation was made from plans prepared by the engineering department of the railroad.

AUSTRALIAN STRATEGIC RAILWAYS.—It is reported that the construction of the strategic railway by the nearest direct route between Adelaide and Brisbane will shortly be begun.

senger, consisting of a single electric car, and a westbound freight. Three passengers were killed and thirteen injured. Both trains were running at full speed, making a very bad wreck. There was a dense fog at the time.

The trains in collision at Irving, N. Y., on the second, were northbound freights, the second train running into the one preceding at about three miles an hour. The engine, caboose and ten freight cars were badly damaged. One of the brakemen was killed and five other trainmen were injured. The leading train was an extra, stopped for water. The other, No. 303, was

¹Abbreviations and marks used in Accident List:

rc, Rear collision—bc, butting collision—xc, Other collisions—b, Broken—d, Defective—unf, Unforeseen obstruction—unx, Unexplained—derail, Open derailing switch—ms, Misplaced switch—acc. obst., Accidental obstruction—malice, Malicious obstruction of track, etc.—boiler, Explosion of locomotive or road—fire, Cars burned while running—P. or Pass., Passenger train—F. or Ft., Freight train (including empty engines, work trains, etc.)—Asterisk, Wreck wholly or partly destroyed by fire—Dagger, One or more passengers killed.

running under a permissive block signal and also had been warned by torpedoes.

The trains in collision at Cayuga, N. Y., on the ninth were a westbound passenger No. 3 and an eastbound freight. The freight was standing on a side track and the passenger ran over a misplaced switch and into the head of the freight. Three trainmen were injured. The switch had been left open by a brakeman of the freight in consequence of a misunderstanding with the conductor.

The trains in collision at Irvington, Ky., on the ninth, were eastbound passenger No. 143 and westbound passenger No. 144. Both engines were considerably damaged, but no cars were badly smashed or ran off the track. The fireman of the westbound train was injured.

In the collision at Dillon, S. C., on the night of the 28th, northbound passenger No. 88 ran over a misplaced switch and into some freight cars standing on a side track, damaging the engine and wrecking four freight cars. The engineman of the passenger train was slightly injured.

The train derailed near Beardstown, Ill., on the fifth was southbound passenger No. 122. One passenger car was overturned and fell into water 2 ft. deep. Eleven passengers were injured. The cause of the derailment was the breaking of a pin in a switch stand.

The train derailed near Greene Junction, Pa., on the seventh was eastbound passenger No. 6, and the train ran several hundred feet on the ties before it was stopped. Many passengers were injured, but none seriously. The cause of the derailment was a broken pedestal of one of the trucks of the tender of the locomotive.

The train derailed near Hailey, Okla., on the night of the tenth was a southbound freight, and seven cars of oil were burnt up. The derailment, as well as the fire, was caused by the ignition of oil which dripped from a tank car on a hot brakeshoe, the burning oil causing a sudden and violent explosion.

The train derailed at Dubberly, La., on the night of the eleventh was westbound passenger No. 11. The train ran over a misplaced switch and was derailed entering the side track, three cars being overturned. Two passengers were slightly injured. The cause of the misplacement of the switch is charged to malice. The switch had been moved but slightly from its normal closed position and the switch light gave an indication of clear for the main line.

The train derailed at Youngstown, Ohio, on the nineteenth was an eastbound freight, and the engine and eight cars of cattle were piled up in a bad wreck. A brakeman was killed and the engineman and fireman were injured.

The trains involved in the accident at Bristow, Va., on the twenty-third were a northbound freight of the Chesapeake & Ohio and a southbound passenger of the Southern. The freight was derailed half a mile north of the station by failure of bolts in a freight-car truck, and ten cars were badly damaged. The southbound track was obstructed. The passenger train came along just at that moment and the engine and first two cars were derailed and the fireman was killed. Two passengers and three employees were injured.

The train derailed near Colorado Springs, Col., on the twenty-second was passenger No. 15 and the engine and three cars were ditched. The engineman and fireman were killed and nine passengers and two trainmen were injured. The cause of the derailment was not determined.

The train derailed at Morris Junction, Pa., on the twenty-fifth was a westbound passenger, and five trainmen were injured. The derailment was caused by a large rock which fell down the mountainside.

The train derailed near Claremont, N. H., on the twenty-sixth was an eastbound passenger and four cars were partly overturned. One employee was killed and one passenger and three employees were injured. The cause of the derailment was a washout due to a flood in Sugar river.

THE PASSENGER FARE QUESTION IN OHIO*

By L. E. JOHNSON,
President, Norfolk & Western

I come to you, not as a stranger, but as a friend and neighbor, to ask your aid and influence, not in order that your railway properties may show increased profits, but that the efficient passenger service furnished to the citizens of Ohio shall be at least self-supporting, and shall pay to the carriers within the borders of your state its fair proportion of the expenses of operating the railroads of your state. The railroad companies, as Justice Hughes pointed out in a decision of March 8, 1915, declaring that a two-cent maximum passenger rate law of West Virginia was unconstitutional, should not be "forced to carry passengers, if not at or below cost, with a merely nominal reward considering the volume of the traffic affected." If by such laws the revenue from the passenger service is thus unfairly reduced, the result inevitably must be that the traveling public will finally suffer in decreased efficiency of service.

The development of your railway properties under private ownership and by private initiative, in co-operation with the various fields of human endeavor, has been responsible for great material development and prosperity in all activities, and I cannot feel that our citizens, when the matter has been frankly placed before them, will sanction, for political or other reasons, legislation prescribing a rate for the carrying of passengers that does not pay to the carriers a reasonable return for the services rendered, and in so doing prevent a continuance of further development, not only in the sections which are now served by railway companies, but also in areas of undeveloped territory.

The progressiveness, initiative, and resourcefulness of the people of our country can be illustrated by the fact that, with a population of 100,000,000, we have under private investment and management about 250,000 miles of railway; while all Europe, with 450,000,000 population (about four and one-half times as many) has 213,000 railway miles, principally state-owned. In Europe there are 5.7 miles of railway line per 100 square miles of area, and in the United States over 8 miles of railway for the same area. With us there is a mile of railway for each 400 inhabitants, and in Europe there is a mile for about 2,100 inhabitants. If the European ratio to population prevailed in this country, we would have less than 48,000 miles, instead of nearly 250,000.

Our mileage has grown because of the vision of the men who projected it, and invested in the securities of your railway properties. These securities are held, broadly speaking, by the American people. The integrity of every life insurance policy, the proceeds of which we may hope to leave to those dependent upon us, rests in great measure upon the integrity of your railway property. To permit the value of this property to be depreciated will affect intimately the value of your life insurance policies, and nearly every other form of investment. These values will of necessity be seriously affected unless your railway properties are permitted to earn a fair return upon the monies devoted to the service of the public, and I believe that the American people will demand that this fair return be permitted to be earned, when they understand the situation of the railway companies, and feel that the matter is being fairly laid before them.

Prior to March 10, 1906, the passenger fares in the state of Ohio were lawfully based upon a rate of three cents per mile, and by legislative enactment of that date the rate per mile was reduced to two cents, a reduction of 33½ per cent. Under this act the receipts from the passenger service are not only insufficient to provide a reasonable return upon the investment, but in reality cause the carriers to operate their passenger service at a loss.

That the service has been well performed, though at a loss,

*From an address before the City Club of Cleveland, Ohio, March 18, 1915.

is evident by the reports of your commission, which show that millions of passengers have been safely carried, and that few have been injured while under the care of the railway companies. Travel upon railway trains, privately operated, is far safer than travel upon public highways, publicly administered. But the continuance of this condition, at least as to the adequacy of train service, cannot go on indefinitely against diminished and inadequate revenues.

That careful and scientific investigation of passenger rates has shown them to be below the value of the service is proven conclusively by the findings of the Interstate Commerce Commission. Can you ask for any higher authority than the finding of this commission charged with the duty of regulating the carriers of this country?

Acting upon this finding of the commission, interstate passenger rates were increased generally to two and one-half cents per mile. If a ticket from Buffalo to Cleveland (interstate) is worth two and one-half cents per mile to both carrier and passenger, a ticket from Cleveland to Columbus (intrastate) on the same train, is worth as much. Yet the law says it must be furnished for two cents per mile, which is less than the cost to the railway for rendering the service.

I know you will concede that confiscation is not reasonable or lawful regulation, and that under the guise of regulating passenger fares we should not be compelled to operate at a loss. Yet that is precisely the condition confronting the Ohio railroads today. The receipts of the Norfolk & Western for passenger fares in Ohio for the year ending June 30, 1914, were \$706,048.84. The cost of operating the passenger trains was \$683,658.57, leaving an excess of but \$22,390.27. Against this small balance is chargeable the taxes, interest and dividends apportioned to the passenger traffic. The taxes paid in Ohio chargeable to the passenger traffic were over \$63,000, so, without considering dividends, interest and the maintenance of equipment, roadway and structures, the Norfolk & Western operated its intrastate passenger trains in Ohio last year at a loss of over \$40,000.

The total valuation of the Norfolk & Western in Ohio for taxes is over \$26,000,000. The Norfolk & Western paid the state of Ohio in 1907 over \$136,000 for taxes, and last year it paid more than \$316,000, an increase of more than 132 per cent, and not including the United States income tax. The taxes paid per mile of road have increased in seven years from \$514 per mile to \$1,245 per mile. But this is not all. Grade crossing elimination work in Ohio, ordered by the local authorities, will cost the Norfolk & Western about \$700,000 this year. During this same period in other states traversed by the Norfolk & Western our assessment for taxes has increased from \$530 per mile to \$788. While in Ohio passenger rates have been decreased one-third, our taxes are increased more than two and one-half times.

In addition to this, the increased value of passenger equipment demanded by the public will call for additional expenditures for such equipment, and additional taxes on the value of such equipment. The construction of wooden passenger cars has practically ceased. During the year 1913 and 1914, the Norfolk & Western has spent for steel passenger cars \$933,000, and to replace with steel the wooden cars still in use will require an expenditure of more than \$4,600,000—this for the Norfolk & Western alone. To replace the wooden passenger cars of the railroads of the United States with steel will cost more than \$614,000,000; and yet the railways are expected to arrange for this expenditure, which will not add one dollar to the revenue, and for a business which is now handled at a loss for every passenger carried for two cents per mile.

At the time that the two-cent passenger rate law was enacted in 1906, it was argued by the proponents of the measure that the reduction of the rate from three cents would stimulate traffic, and that the increased traffic would more than offset the decreased rate. Experience has shown that this expectation has failed. In the year 1905, under the three-cent rate which then

existed, the railroads of Ohio carried an average of 44 passengers per train mile, equaling \$1.32; while in 1914, in spite of the increased population, there were only carried 50 passengers per train mile, equaling \$1.00; so that your railways received 32 cents per passenger train mile in 1914 less than they received in 1905, and are only carrying an increase of 6 passengers at the end of nine years.

Every American takes pride in the passenger service of American railroads. Here in Ohio, in the very face of adverse legislation, we have each year made betterments for the welfare and comfort of the traveling public. Roadbed, motive power, and equipment are the safest and best that money can buy. Safety and speed combine to make the journey of the traveler short and in comfort, and keep the business man in close communication with his affairs, however distant his trade and commerce may go and come. The roadbed has been made safe and is kept safe for you. The motive power is efficient and swift. The steel cars are safe and comfortable. Employees who operate the trains and keep up the tracks are competent, and are paid the highest wages of any railroad men. The rates charged for both freight and passenger service are the lowest in the world.

In the face of loss we have continued to improve our facilities, increase wages, and make betterments. We expect to pay—and do pay—a fair profit to the manufacturer on every car, every locomotive, every steel rail, every tie, and all other supplies that we buy. No man, no community, and no nation can prosper unless a profit is made. Every man in Ohio, whether he be a manufacturer, merchant, banker, farmer, or workman, expects and has the right to expect a profit upon what his energies and activities may supply to the world. It is not fair to ask any man to give of his talents or property without a reasonable reward. You gentlemen do not do it and you should not ask the railroads to do it. The difference between you and the railroads is this: you will not operate your business at a loss—we have to.

All that the Ohio railroads are asking is fair and equitable treatment as between mutual business interests. The Interstate Commerce Commission, after an exhaustive investigation, has sustained our case for an increase of passenger fares, and named Ohio as one of the offenders in enacting confiscatory legislation as to such fares. All we are now asking the people of Ohio to do is to right the wrong.

Our appeal is made directly to the representatives of the people of the state and if this appeal is backed up by public sentiment enlightened by the information coming from such business associations as are represented at this meeting, then there will be no question that the injustice that now exists will be remedied by the law-making authorities.

FREIGHT TERMINAL CAR CHECKING SYSTEM*

By I. T. TYSON

Assistant Trainmaster, Philadelphia & Reading, Port Richmond, Philadelphia, Pa.

In the operation of large terminal yards I have always found that success depends upon the proper training of the men on whom you must rely at times of congestion; too often, for various reasons, terminals are forced until the "filled up" question is forgotten and they are compelled to become blocked for a period. Under these adverse conditions, every man, from the general yardmaster down to the messenger boy, must be on the job every minute. The engine despatcher must keep in close touch with the mechanical department that he may be thoroughly familiar with just how the road engines are getting through the house so that where repairs are necessary and engines will not be ready by the time the crews' rest is up another engine can be ready. He must also keep in close touch with the yardmasters so that trains may be moved from the congested territory, or where there must

*Submitted in the contest on the Operation of Terminal Yards.

be a clean-up to permit the handling of promised business, or the making up of scheduled or fast freight extras.

From the moment a car arrives at the terminal yard a record should be kept of its movement to enable each yardmaster to keep in touch with every car standing or moving within his respective territory without any waste of time in hunting up the information. We have found it good economy to have sufficient car checkers to allow a yardmaster to be out on the job looking after his power and the proper handling of business. On the arrival of all trains at the terminal the car tickets are turned over at once to the car checker for checking. In this way no cars should get in without tickets or bills, and if a car does arrive without a ticket the question is immediately taken up with the conductor who brought it to learn where it was picked up, etc., and that point is wired for the necessary information, which is usually

In breaking up trains we use the ram system with very good results from the fact that it is not necessary to furnish a crew with the large number of men used to operate a hump. This crew consists of an engineman, fireman, conductor and seven brakemen; one of the latter operates the ram, one is a cutter and five are car riders.

Our receiving yard permits us to pull in and cut out four 60-car and four 45-car trains, which enables us to keep the ram crew going constantly when business is running normal. Should there be a slack time the ram crew is utilized to switch light cars in the outbound yard. Our classification yard is divided into three sections, with 15 tracks to each ladder, the tracks holding from six to 30 cars each.

Our car riders ordinarily ride the cars for a distance of two city blocks, catching them while on the run. The man on the ram regulates the speed according to the distance and the time between the cuts. The engine can be kept going without stops with a good operator on the ram, and car riders who understand their business so as not to take cars in too fast or place them on switches or the head end of tracks, requiring the engine to stop poling and run down to push the cars into clear.

I have always impressed upon our men the importance of the prompt handling and spotting of any car after its arrival. High class freight must receive preference. We aim to have all cars placed promptly, so that the agents may feel perfectly safe in going after the consignee to get teams to release them. I have always found this to be the real secret of keeping down congestion, as there are so many "holidays" and so much "inclement weather" to be accounted for that the only thing to do is to spot the cars and keep pounding for their release, after which they should be promptly moved to the outbound yard, properly switched and started to destination to release per diem charges. The men are taught that today is the time—let nothing lie over until tomorrow, and we will then be prepared for the unforeseen things which will arise the day following and which will require all of our attention without having to take care of something left over from yesterday.

The secret of successful handling is eternal vigilance. The only true way to obtain this is by keeping a constant check not only on the men, but on the results obtained, as well, by actually knowing how each man in charge is performing his duties—whether he works for a clean-up each day, handling his scheduled trains on time and getting his extras out within the prescribed time. With this condition all of his subordinates soon get the habit and everything moves with one strong push. If we find the bad-order car left over, part of a drag backed off without being properly switched and thereby requiring the second handling, tracks not checked up, and the conductor not in position to say what cars are on hand and why they are delayed, we may know that this fellow is going to give all the trouble that is required for an ordinary sized terminal. He wants to be set right as quickly as possible before that spirit extends to the whole territory.

SOLDIERS AND RAILWAY FARES IN ENGLAND.—The regulations regarding fares to be paid by soldiers traveling on English railways have recently been set forth in a letter from the Army Council to the Railway Nationalisation Society: (a) All soldiers are granted one free journey on leave, prior to embarkation, or after serving three months, if they have not previously received this concession. (b) All officers and men, traveling on leave from the continent, get a free warrant to their homes and back. (c) All sick and wounded soldiers, recommended by the medical authorities for sick leave, receive free warrants to their homes and thence to the station at which they are ordered to rejoin. (d) All officers and men under training, traveling on leave at any time, can do so at a single fare for the double journey. Soldiers may also travel free in cases of serious illness or death of a near relative.

Form 4115-No. 5		8-14-4500
Philadelphia & Reading Ry. Co.		
CAR RECORD TICKET		
Month.....		
Initial	Car Number	
RECEIVED		
Date.....	19	
Engine.....	Time.....	M
Contents.....		
Destination.....		
FORWARDED		
Date.....	19	
Engine.....	Time.....	M
Contents.....		
Destination.....		
Remarks.....		

Sample of Car Record Ticket Used on the Philadelphia & Reading, Slightly Reduced

promptly received. At the time the train is being checked the cars are marked for different territories.

The car tickets are then turned over to the clerk, who takes the record, which is operated by the card system. The inbound record being taken, the card is filed in a rack specially constructed in three sections of 100 pockets each, in rows of 10 to a section, with numerals running on the top and the side from 0 to 9. This permits the use of the last two numerals of a car number for filing. The left hand section is used for the arrival of cars, and the right hand section after the cars have gone out and the outbound record has been filled in on the bottom of the tickets, which are then filed in this rack until the end of the month. At the close of each month all cards which have been filed in the outbound section are removed to a drawer constructed in the same way, where they are held for one year, to be handy for any question that may come up. At the expiration of one year the cards are removed to a record room; the cards from each pocket are tied up separately, and the entire month is filed in a box, which makes it handy to find any record that may be asked for. Any cards that may still be in the left hand rack at the end of the month or because of still being on hand are removed to the middle frame and as the cars go out these cards are removed, filled out and filed where they belong.

The cards used are in 10 different colors, so arranged that each day has its special color, viz.: dark red, left hand corner at top, first of the month; in the middle, the eleventh; in the right corner, the twenty-first; all white, thirty-first; this being the only date where the four tickets are required: With the second, light yellow in the left corner; twelfth, middle; twenty-second, right corner, and so on with all colors. The form number corresponds with the date that the card is to be used, and acts as a check. This enables us to learn at sight the number of old cars in the territory, and just how old they are. These cards can be quickly gone over each day and action taken to start the old cars moving.

J. W. BETTENDORF ON FREIGHT RATES AND BUSINESS ACTIVITY

Clifford Thorne, chairman of the Iowa railroad commission, who is opposing the freight rate increase proposed by western railroads, has received a vigorous protest against his policy from J. W. Bettendorf, president of the Bettendorf Company, of Davenport, Iowa.

Mr. Bettendorf says:

"For the period of ten months following July 1, 1913, our payroll amounted to \$1,400,000, paid to an average of 2,000 men at the rate of \$35,000 per week. From May 1, 1914, to the present time (ten months) we have been enabled to employ an average of only 400 men, and in this period the payroll has not exceeded \$300,000.

"This shrinkage of \$1,100,000 during the past ten months represents just this much loss to the merchants of this community, a loss most seriously felt. Merchants approach me continually in the hope that I can assure them that conditions are improving and business will soon return to normal. This I cannot do. . . . What has the shipper gained if, by the saving of a few dollars in freight, he contributes so largely to a condition that actually destroys the buying power of the community? As a large shoe dealer recently put it, 'What gain is there in saving a few cents on freight if I cannot sell my shoes?'

"The very fact that the railroads claim the increase of rates asked for would produce but \$10,000,000 additional revenue, while the opposition claims it would produce \$100,000,000, would seem to indicate that much if not all the present discussion is based entirely on theory and the skilful manipulation of figures.

"That business is paralyzed, practically at a standstill, with our manufacturing institutions and merchants thoroughly alarmed, is an undeniable fact and not a theory. Will not these deplorable conditions be aggravated by a determination to prove a doubtful theory? Activity of the railroad companies spells prosperity; their inactivity means depression generally.

"Grant this increase asked for. If the returns resulting therefrom are abnormal, it will be immediately reflected in a surplus (since future railway accounting is to be under government supervision) and when this surplus assumes normal proportions then will the shipper be justified in demanding participation therein through the medium of lowered rates.

"I will not attempt to defend the past conduct of some of the railway companies, but it seems to me that with the future issuance of bonds or increases in stock, under the supervision of the government (just as are the public utilities companies of the state of New York under the control of the state) the past can and must be absolutely ignored. We are now confronted with a condition that must be met by the application of common sense.

"Under normal conditions, such as existed in 1913, the tonnage of freight arising directly from the activity of our company amounted in round numbers to about 450,000 tons, or an average of one train a day consisting of fifty carloads of 60,000 pounds each, which at an average of \$2.40 per ton, created a revenue to the railroad company alone of about \$1,100,000, while in 1914 this tonnage shrunk to about 170,000 tons, creating a revenue of about \$400,000 to the railroad companies.

"This inability on the part of the railway companies to purchase equipment not only resulted in the vast falling off of business, but was also the direct cause of the cancellation of orders placed, or the suspension of delivery on large orders, for some of which we had already provided the necessary materials. One such order alone represented nearly \$750,000."

CYLINDERS AND VALVE GEARS*

By G. W. RINK

Mechanical Engineer, Central Railroad of New Jersey

While every effort is being made to increase the efficiency of the locomotive boiler, the economical distribution of steam in the cylinders has also received some attention. In general, however, we are not getting the results that are obtained in good stationary engine practice, due to long steam ports and the use of a single slide or piston valve which has to control admission, cut-off, release and compression.

A design of cylinder overcoming these objections to a considerable extent has been introduced in recent years. It is known as the Hobart-Allfree cylinder, is designed with extremely short ports and the exhaust passages are separated from the live steam passages, thereby reducing radiation and the condensation of the steam. The cylinders are designed to operate with either a slide or piston valve, the latter for use on superheater locomotives. This valve controls admission, cut-off and release, the same as any other valve, except that greater expansion is obtained by providing a sufficient amount of exhaust lap. A small compression valve of the piston type was introduced which controls the compression and provides greater freedom for the escape of exhaust steam. While the two valves release at the same instant, the compression valve remains open slightly longer to allow the exhaust steam, which would otherwise be in compression, to escape, until the piston reaches about 90 per cent of its stroke at working cut-off.

The Jersey Central has two locomotives in high-speed passenger service equipped with slide valves and two with piston valves, with this type of cylinder. A comparative test was made with one of the engines fitted with this type of cylinder and a slide valve against another engine of the same class in the same service fitted with the regulation slide valve and cylinder. These tests showed an economy in fuel and water consumption of approximately 12 per cent. This is the result of investigations on six trips to Philadelphia and return with each engine pulling a four car train, weighing approximately 175 tons.

Tests conducted on other roads with Mallet type locomotives equipped with the same type of cylinders with slide valves show a saving over similar engines not so equipped. With practically the same amount of coal used per ton mile, an increase of 13½ per cent in tonnage was hauled, with an increase in speed of 4.3 per cent and a saving in water per ton mile of 11.1 per cent.

Two of our Atlantic type locomotives were equipped with the piston valve type cylinders during the early part of this year. These engines were also equipped with superheaters and Baker valve gear. No actual tests have been made to obtain an accurate comparison, on account of its being impossible to separate the economies obtained. However, the saving in fuel and water is very noticeable, and in fact is considerably more than if superheaters only had been applied. The locomotives are also capable of much higher speed and can easily haul two to three extra cars without effort. Since its introduction, 162 locomotives have been equipped with the slide valve cylinder in connection with various types of valve gears, and 30 locomotives on various roads are now in service with the piston valve type of cylinder, 20 of which are operated with the Baker valve gear and 10 with the Walschaert gear.

BRITISH RAIL EXPORTS.—The aggregate export shipments of rails from the United Kingdom this year to February 28 were only 266,585 tons, as compared with 641,247 tons in the first two months of 1914 and 510,935 tons in the first two months of 1913. The exports for the month of February of this year declined to 99,840 tons, as compared with 243,495 tons and 279,202 tons.

*Discussion of report on Steam Locomotives of Today, at the annual meeting of the American Society of Mechanical Engineers, New York, December 2, 1914.

ARGUMENTS PRESENTED IN ENGINEERS' WAGE ARBITRATION

Oral arguments were presented in the arbitration proceedings at Chicago on the demands of the Western engineers and firemen, during Monday, Tuesday and Wednesday of this week, and briefs have been filed by James M. Sheean, attorney for the Conference Committee of Managers, and by Warren S. Stone and W. S. Carter for the engineers' and firemen's brotherhoods. The board is to render its decision by April 20.

In the brief filed by Mr. Sheean, it is claimed that the employees have failed to establish the propositions on which their demands for increased pay are based. The decision of Seth Low and John H. Finley, in the Eastern trainmen's case, is cited to sustain the position that the present demand for further increases can only be supported by showing that conditions have changed since 1910, and makes the claim that each of the basic propositions contained in Mr. Stone's opening statement is disproved, not only by the railroads' exhibits, but by those which the employees themselves have submitted.

Attention is directed to the fact that since 1910 the railroads involved have expended over \$660,000,000 in extensions, additions and improvements to property, and that over \$220,000,000 of this amount was expended for the purpose of increasing efficiency and safety and to expedite train movement, that through the elimination of grades and curves and the improvement of roadbed, as well as motive power, the engineers and firemen, with the larger power, which takes the higher rates of pay, have been able to get over the road in a shorter period of time than in 1910; and therefore the higher rates of pay taken by the larger power have been earned in fewer hours upon the road.

Attention is also directed to the fact that the exhibits introduced on behalf of the employees disclose that between 1909 and 1913 the amount of coal consumed on the railroads involved for each thousand dollars paid to locomotive firemen has decreased nearly 5 per cent; even with this decreased coal consumption per thousand dollars of compensation, it is shown by railroad exhibits that with the installation of heavier power there has been constant improvement in the matter of labor-saving devices, such as mechanical stokers, coal-pushers, ash pans operated by compressed air, pneumatic door openers, sloping tanks, etc.

As to the claim advanced that the so-called "productive efficiency" of the engineers and firemen has increased, the brief points out that the net income from operations in 1914 was \$15,000,000 less than in 1910; that in 1914 there was declared out of income \$22,000,000 less in dividends than in 1910; that there was carried to surplus in 1914 \$24,000,000 less than in 1910; and that in the first seven months of the current fiscal year there is a falling off of over \$41,000,000 as compared with the gross revenues for a corresponding period in 1914.

The brief emphasizes the fact that no witness on behalf of the employees contradicted the correctness of the interpretation placed by the railroads upon the proposals in arbitration in making application of the proposals to the actual operations on the roads involved during the month of October, 1913, in which the proposals were presented. The employees' expert statistician testified that if there was given to this month's operation only the importance which that month's payroll bore to the payroll for the entire year, an accurate estimate of the increased expense could be made for the year; and by the adoption of this method it is shown that through a year's operation the proposals would mean an increase in the payrolls of the engineers and firemen from \$75,000,000 to over \$115,000,000, or nearly \$41,000,000.

Conceding that the rates and rules should provide full, fair and adequate pay for important duties and responsibilities, Mr. Sheean directed attention to these facts: "When a fireman enters railroad service he is on the bottom rung of a ladder of promotion created by seniority rules under which the oldest

man in the service has the right to make selection of his run. From the day he enters service he is guaranteed: (1) A minimum daily wage for every day he is called upon to work, no matter how few the hours he works or the distance he runs. (2) Pay for every mile he runs, no matter how short the time in which the run is made. (3) A minimum hourly rate, irrespective of the distance run. And with these guarantees, under the schedules now in force, some of the men are earning each year as high as \$3,725 as passenger engineers, \$3,342 as freight engineers, over \$2,000 as passenger firemen, over \$1,800 as freight firemen. From actual payroll figures here introduced, which give the names of every individual in engine service, with detail of his earnings, it is shown that in regular passenger service engineers earn as high as \$341.60 per month, and that the average monthly earnings of all engineers in such service is \$183; that firemen in such regular passenger service earn as high as \$209.89 per month, and that the average monthly earnings of all firemen in such service is \$115; that engineers in regular freight service earn as high as \$358 per month, and that the average monthly earnings of all engineers in such service is \$170; and that the firemen in regular freight service earn as high as \$221 per month, and that the average monthly earnings of all firemen in such service is \$110."

In conclusion Mr. Sheean said: "These payroll figures demonstrate that the present schedules provide full, fair and adequate pay, whether measured by comparison with other trades, by comparison with other railroad employees who have like duties and responsibilities, or by comparison with engineers and firemen of the East or the South. These payroll figures have not been contradicted by the employees whose names appear thereon, notwithstanding the fact that during the hearing, while the railroad exhibits were being introduced, Mr. Carter stated to the board of arbitration: 'I have reached the conclusion that our case is lost if we treat the exhibits of the railroads too seriously.'"

A thinly veiled threat that the engineers and firemen would not again be inclined to submit to arbitration if their demands were not granted in this proceeding was made by President W. S. Carter, of the Brotherhood of Locomotive Firemen and Enginemen, in his oral argument.

"If these wage movements are adjusted amicably," he said, "through arbitration and under a federal law, it must take from one to two years to reach a conclusion. These wage movements may be begun when railroad business is at its height, and it may be that when the time comes for the rendering of an award one or two years later railway traffic may be at a low stage. If railroads are to take advantage of that it would make it impossible for the officers and committees of these organizations to curb the men on the engines. We were told at the beginning of this movement that if we did not strike there would be a change in traffic before the arbitrators could render an award, and if what they told us is true I fear they will never again give us consent to prolong the agony for two years before an award is made."

"Hundreds of millions of dollars would be available for the remuneration of engineers and firemen if the finances of western railroads had been wisely and properly managed," he said. "A review of the past history of western railroads discloses the fact that the extraordinary gains in revenue which have arisen from the bounty of the federal and state governments, the population of the country, the development of trade and industry, the adoption of mechanical devices and improved operating methods, added capital investment and the increasing work and efficiency of employees have, to a large degree, been absorbed by fictitious capitalization or dissipated by improper or misguided financial management."

Mr. Carter also asserted that the roads had failed to report to the Interstate Commerce Commission the exact value of their holdings, saying that "the Southern Pacific alone is now estimated to have oil and timber holdings ranging in value from \$100,000,000 to \$700,000,000, which are reported to the Interstate

Commerce Commission at a book value of slightly more than \$40,000,000." Mr. Carter also referred to the finances of the Rock Island and the St. Louis & San Francisco and asserted that all of the railroads in the West are virtually under the control, through interlocking directorates and stock ownership, of the Morgan and Rockefeller groups of financiers.

COOLING HOGS IN TRANSIT

One of the results of placing the settlement of claims in charge of the operating department on the St. Louis & San Francisco, was the introduction of a device for watering or cooling off hogs, which has considerably decreased the claims due to their dying in transit. Formerly when it was desired to cool them water was used direct from the track tank spouts. The cold water striking the hogs on the back and neck caused congestion, and consequent death. The loss in this way has been greatly reduced by putting in a special hog watering device at each of the tanks, similar to the one shown in Fig. 1. The 3 in. wrought iron pipe extends from the bottom of the tank to within about 5 ft. of the ground, and the lever which operates the valve is fitted with a lock, so that it cannot be tampered with. The valve is in the tank, at the top of the 3 in. pipe, so that when it is closed there will be no water left in the pipe to freeze and cause trouble.

In cooling off the hogs a stream of water is first turned on the bedding underneath them. After this is well saturated the nozzle is turned toward the roof of the car and the water is

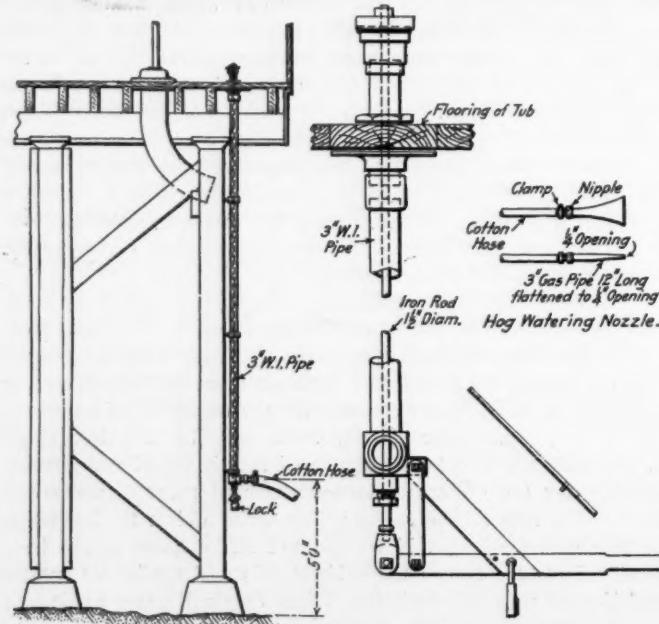


Fig. 1—Device for Cooling Hogs in Transit as Applied to the Older Water Tanks

allowed to spray over the backs of the hogs gradually. The device is simple in construction and saves its cost many times over during the summer season. The bill of material is as follows:

2 3-in. hose nipples	\$.30
1 3-in. floor flange	.30
1 3-in. nipple	.12
15-ft. 3-in. W. I. pipe at 22c	3.30
1 3-in. special valve	2.00
1 3-in. lock nut	.10
1 16-in. iron rod, 1/2 in. diameter	1.00
1 3-in. special elbow casting	2.00
25-ft. 3-in. cotton hose at 40c	10.00
2 clamps to fasten hose	.20
1 nozzle, 3-in. flattened to 1/4-in.	.20
1 switch lock	.40
1 valve operating device	2.25
Labor	10.00
Contingencies 10 per cent.	3.18
Total	\$35.35

With the present standard 50,000 gal. capacity frame water tanks the hog watering device is attached direct to the supply pipe, which is enclosed in a frost proof box as shown in Fig. 2. This costs only \$20.85.

1 2-in. globe valve	\$ 3.15
1 hump hose rack	2.95
25-ft. 2-in. liner rubber cased hose	10.00
1 nozzle, flattened	.75
Labor	4.00
Total	\$20.85

Circular 316, issued by the superintendent of freight loss and damage claims, gives detail instructions for the watering of hogs in transit. It specially directs attention to the fact that the first

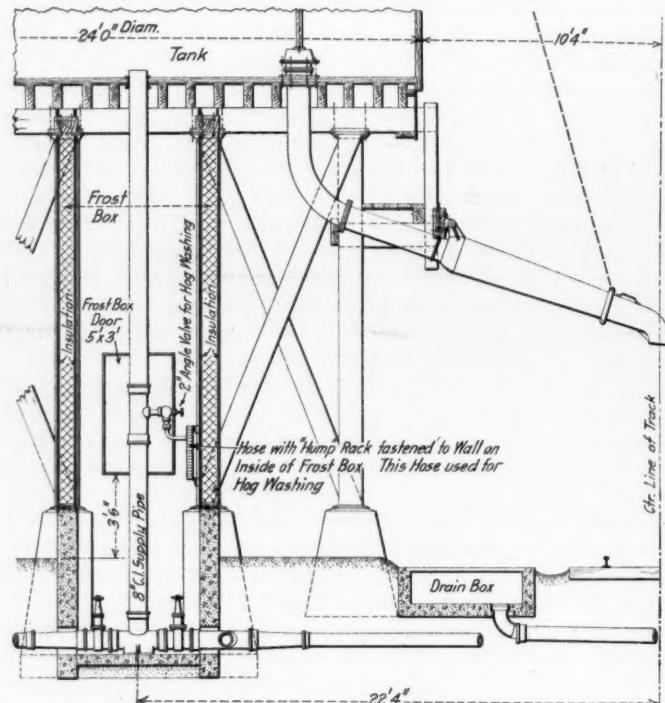


Fig. 2—Hog Washing Device as Applied to New Standard Track Tanks

warm weather of the season is more severe on hogs than the extreme warm weather later; therefore, extra precautions should be taken in the handling of the shipments made in the early part of the season. Hogs as a rule do not suffer while the cars are moving, but a great many die from overheating while cars are not in motion. Conductors are cautioned to watch the condition of hogs closely, and when they see they are getting warm or heating up, should arrange to have them watered at the first opportunity.

When any of the hogs are found dead on arriving at St. Louis or Kansas City, bad order reports are immediately rendered, so that an immediate investigation may be made to ascertain whether the shipment was properly watered. The hogs are watered immediately upon arrival at division points, or at the last water tank before reaching such points. A great many of them arrive in St. Louis in the morning after 7 a. m., and seldom reach the stockyards until noon, or in the heat of the day. The loss has been considerably reduced by seeing that they are watered before delivery to the terminal.

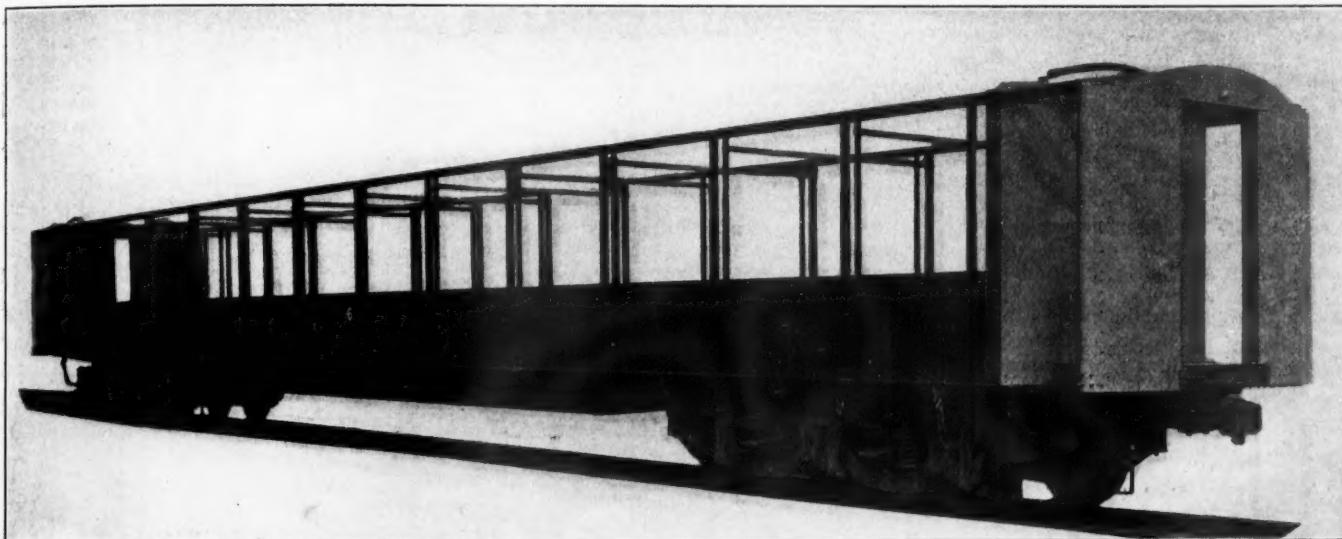
ENGLISH RAILWAYMEN AND ENLISTMENT.—The British war office has made the following announcement: The railway executive committee is working out a scheme in conjunction with the war office by which increased opportunities to enlist into the army will be afforded to the men employed by the railways. This scheme will be framed in such a way as not to impair the working of the railways, and until it can be put into operation railwaymen will only be recruited under the regulations which existed previously.

Steel Frame Passenger Equipment With Wood Finish

New Grand Trunk Suburban Cars Are Designed for Ease of Repairs in Present Shops, as Well as Strength

The Grand Trunk recently placed in service a number of suburban coaches, which are 83 ft. 3 $\frac{3}{4}$ in. long over buffers, 74 ft. long over body end sills and weigh complete, ready for

strength to a steel car, in addition to which the car body and truck are locked together, so that the braking force is effective in stopping the car body as well as the trucks in case of derail-

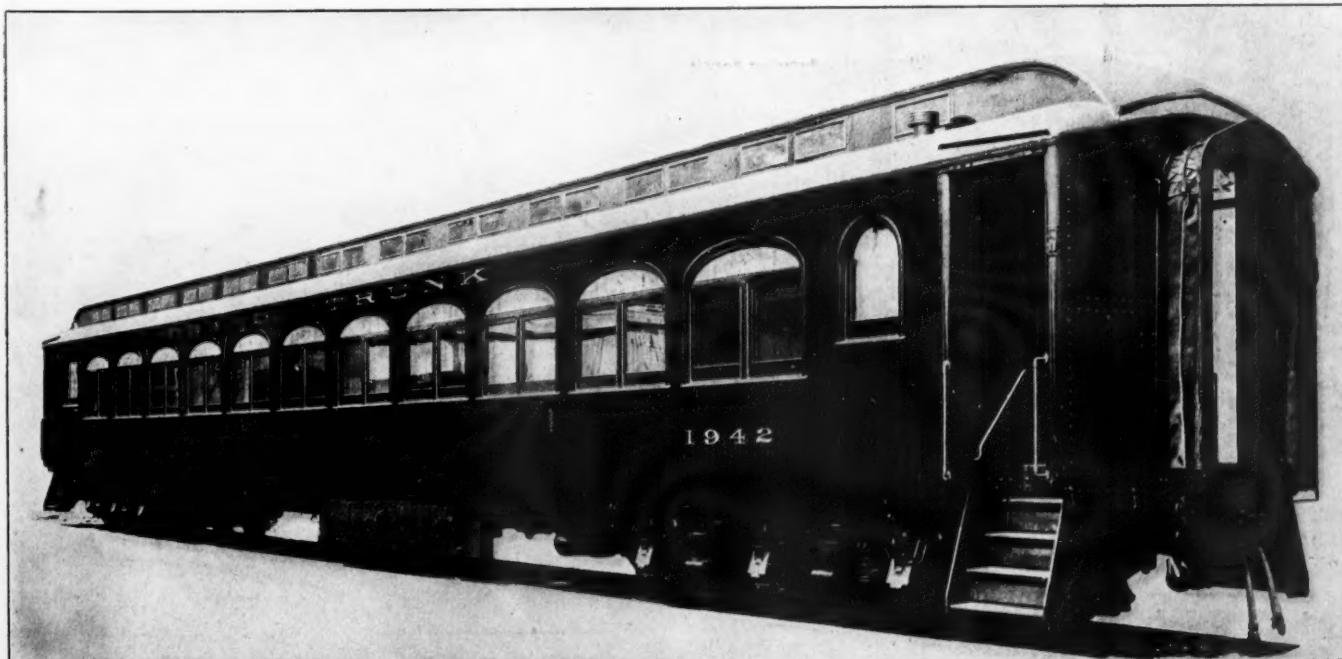


Grand Trunk Suburban Car During Construction, Showing the Arrangement of the Steel Members

service, with six wheel trucks equipped with rolled steel wheels, 137,000 lb.

The framing of these cars is of steel construction, with all steel vestibule, the interior and exterior finish being of wood. This is the result of much study and consideration, with the

ment or collision. By the introduction of this truck and body bolster locking device,* and the adoption of all-steel vestibules, the possibility of telescoping is believed to be practically eliminated. The locking device is designed to have a three-fold function, in case of wreck or derailment: First, to prevent tele-



Steel Frame Suburban Car with Wood Finish Recently Placed in Service on the Grand Trunk

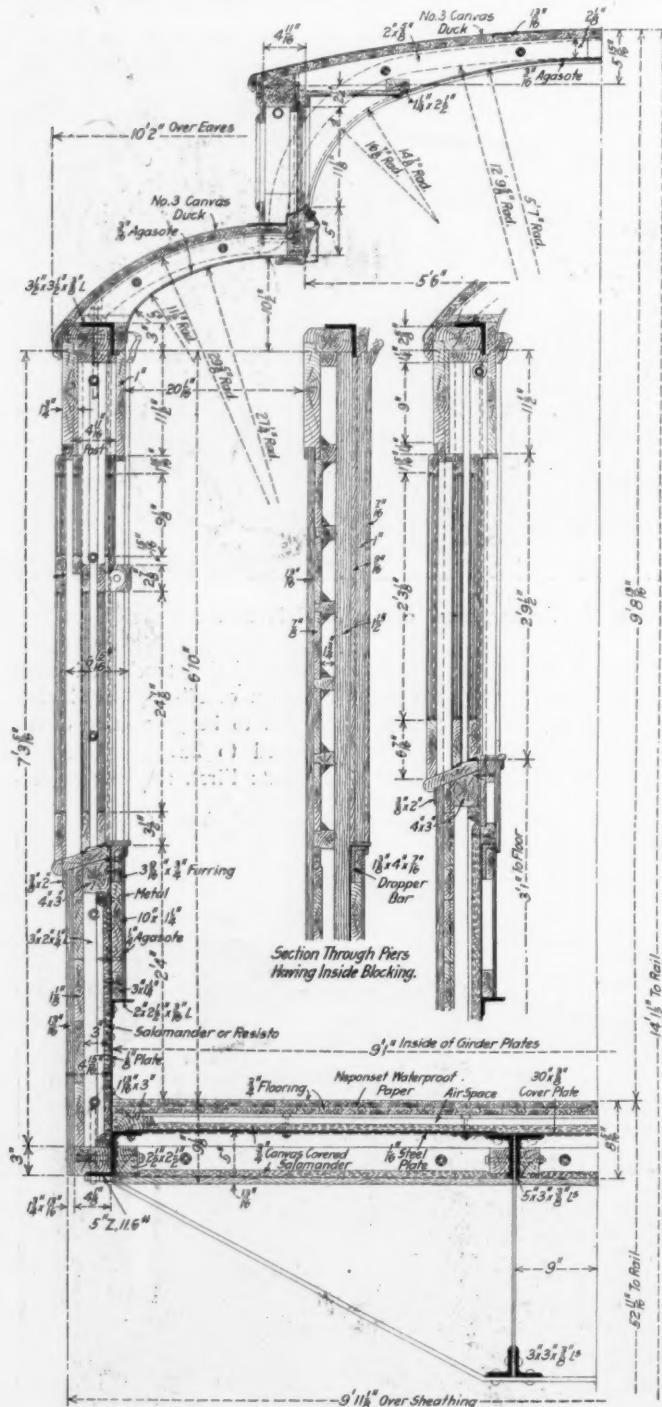
object in view of obtaining a construction which offered a maximum of safety and comfort to the traveling public, and a minimum expense to the railway company for maintenance. This problem seems to have been successfully solved by the adoption of a steel underframe and steel side framing, equivalent in

scoping; second, to lower the center of gravity by adding the weight of two trucks (40,000 lb.) to the car body, and thus prevent the body from turning over in case of derailment; third,

*For description of this device see *Railway Age Gazette*, January 10, 1913, page 53.

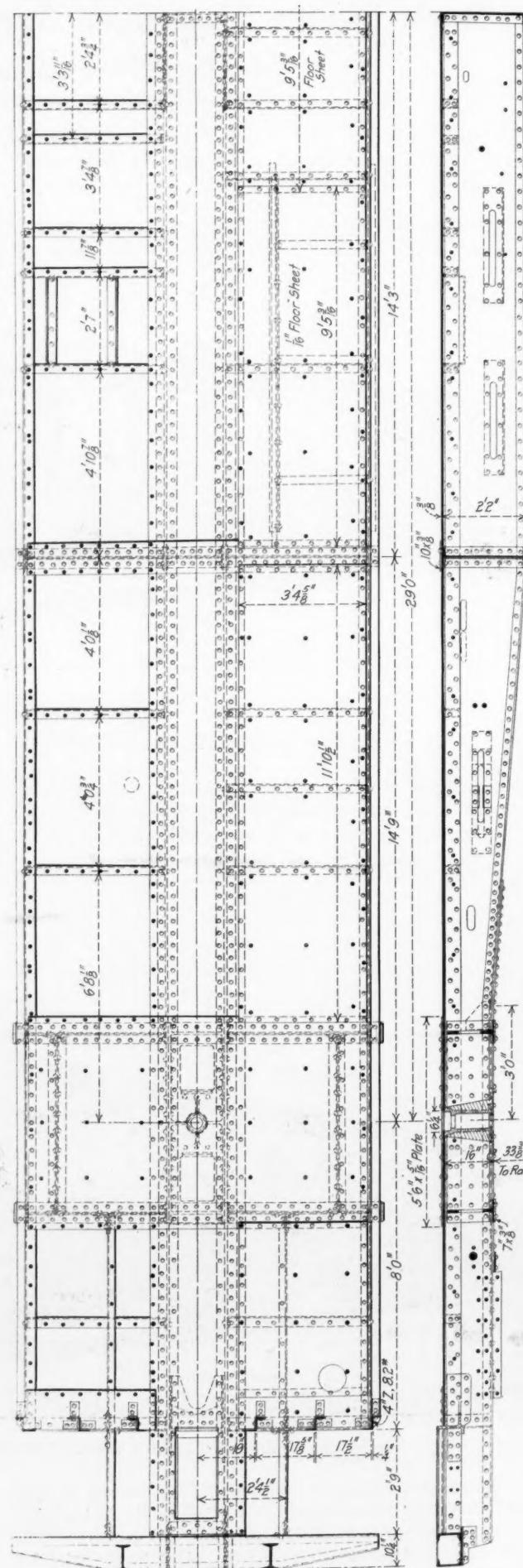
the full effects of the air brake can be obtained under all conditions, even after a derailment has taken place, as each truck is held in position under the car.

By installing steam heat and electric light the car is rendered practically fireproof. The railway officers concluded after careful investigation that the passengers' wearing apparel, the upholstering, etc., in a passenger car is more inflammable than a wood inside finish, and that the paint and varnish in a steel



Cross Sections of the Grand Trunk Car

car is inflammable. By the adoption of a composite construction the car is claimed to be warmer in winter and cooler in summer, and in addition, these cars can be repaired in any of the company's shops at the same cost as a wood car, thus saving the expense of buying special machinery and keeping in stock special material for repairs, which would be necessary with steel interior and exterior finish.

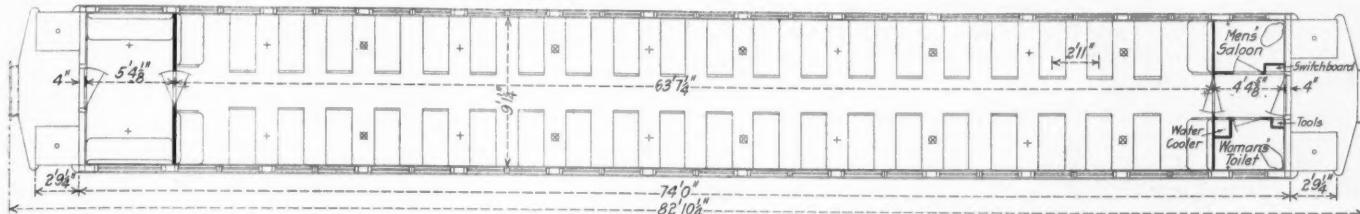


General Arrangement of the Underframe of the Grand Trunk Car

UNDERFRAME

The underframe is constructed with the center sills as the principal members. They are of the built up fishbelly type, continuous from buffer beam to buffer beam and consist of a 30 in. by $\frac{3}{8}$ in. top cover plate, 5 in. by 3 in. by $\frac{3}{8}$ in. top angles, 5/16 in. web plate and 3 in. by 3 in. by $\frac{3}{8}$ in. bottom angles. The depth of the center sill at the center of the car is 26 in., and at the bolster 16 in. The body bolster is built up of eight $\frac{3}{8}$ in. pressings as side members, one cast steel center member of

wood. Wrought iron carlines, 2 in. by $\frac{5}{8}$ in., are riveted to the side plate, completing the steel superstructure, and here again the wood reinforcing is employed. Canvas duck is used for the final roof covering and the headlining is 3/16 in. Agasote. Agasote is also used below the belt rail. No special insulation was necessary in this construction except below the belt rail, where $\frac{3}{4}$ in. Salamander is applied outside the $\frac{1}{8}$ in. steel plate. Special care was taken, however, for insulation under the floor, two air spaces, two layers of $\frac{3}{4}$ in. Salamander and one layer



Floor Plan of New Grand Trunk Suburban Car Which Seats 96 Passengers

heavy construction designed to take the locking device, a top cover plate 5 ft. 6 in. by 7/16 in. extending the full width of the car and two 7 in. by $\frac{3}{8}$ in. reinforcing plates extending from side sill to side sill. There are two crossbearers placed 14 ft. 3 in. on either side of the center of the car and built up of $\frac{3}{8}$ in. pressed steel diaphragms placed back to back, with 10 in. by $\frac{3}{8}$ in. top cover plate and 7 in. by $\frac{3}{8}$ in. bottom cover plate, both extending the full width of the car.

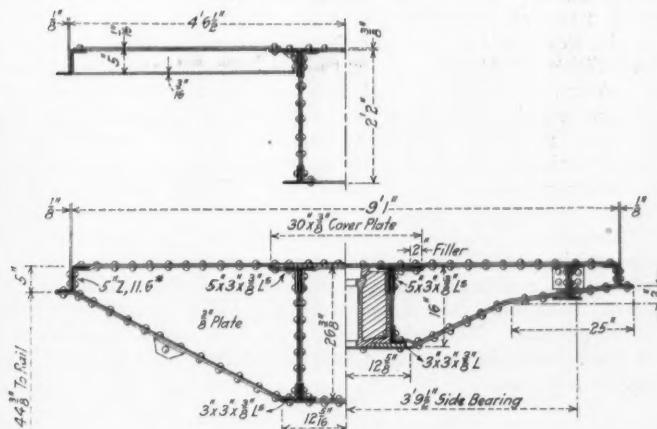
BODY AND END CONSTRUCTION

The side girder consists of a 1 $\frac{3}{8}$ in. by 4 in. by 7/16 in. drop-bar, $\frac{1}{8}$ in. by 35 in. web plate, 2 in. by 2 $\frac{1}{2}$ in. by 3/16 in.

of Neponset paper between the upper and lower course of the floor being used.

The end posts are 4 in., 8.2 lb. Z-bars with wood reinforcing, and the end plate is a 4 in. by 3 in. by 5/16 in. angle. The vestibule posts are 8 in., 18 lb. I-beams connected at the bottom direct to the platform end sill, which is built up of 7 in. channels, while at the top these I-beams are connected to the body of the car by 6 in. channels running parallel with the center line of the car and by 3 in. by 3 in. by $\frac{1}{4}$ in. angle diagonal braces from the ends of the I-beams to the corners of the car body; these braces are in turn braced to the vestibule corners by 2 $\frac{1}{2}$ in. by 2 $\frac{1}{2}$ in. by $\frac{1}{4}$ in. angles. The vestibule end plate is a 3 $\frac{1}{2}$ in. by 3 $\frac{1}{2}$ in. by $\frac{3}{8}$ in. angle and 2 in. by 2 $\frac{1}{2}$ in. by 5/16 in. angles brace this plate to the end of the car body between the I-beam and the outside of the car. The vestibule is sheathed with $\frac{1}{8}$ in. steel plate.

The interior finish is mahogany and rattan seats are used,



Cross Sections of the Underframe

the seating capacity of the car being 96. The Stone Company's axle system of electric lighting is used, the generator being arranged to cut in at about six miles an hour, and the cars are heated by the Chicago Car Heating Company's vapor system of steam heat. They were built by the Canadian Car & Foundry Company, Montreal, Quebec.



Interior of the Grand Trunk Suburban Car

intermediate angle and 5 in. by 11.6 lb. Z-bar side sill. The side posts are 3 in. by 2 in. by $\frac{1}{4}$ in. angles, and the side plate is a 3 $\frac{1}{2}$ in. by 3 $\frac{1}{2}$ in. by $\frac{3}{8}$ in. angle. The steel construction of the body is reinforced with wood posts and horizontal and vertical wood blocking. The interior and exterior finish is of

RAILWAY ELECTRIFICATION IN SWITZERLAND.—There is already a large mileage of railway operated electrically in Switzerland, though a considerable proportion is represented by mountain and special lines other than the general railway system. It is now stated that 1,873 miles of the Swiss state lines are to be converted from steam to electric traction, power being derived from the wealth of water power available.

General News Department

The Atlanta & West Point has put up a telephone line for train despatching, between Atlanta and Montgomery, 175 miles.

Jacob C. Frist, station master at the union station in Meridian, Miss., has received from President Wilson a medal, in recognition of his heroism, a year ago, in rescuing an aged woman and a child from in front of a locomotive. Frist had a leg broken and was otherwise injured.

The United States Civil Service Commission announces examinations, April 27, for the position of assistant supervisor of accounts, in the division of valuation, Interstate Commerce Commission; salary from \$3,000 to \$4,200 a year. It is desired to get men of large experience in railroad accounting.

It was announced at Ottawa on Wednesday that the Canadian government would at once begin operating the transcontinental railway. The line was built by the government for the Grand Trunk Pacific, which signed a contract to take it over for operation on completion, paying for fifty years as rent, 3 per cent of the cost of construction. The road has declined to sign the lease or to begin operation, claiming that terminals at Quebec have not been finished and that in other respects the road is incomplete.

The Baltimore & Ohio requires train employees, and station and track forces, in times of emergency, to render assistance in putting out fires on adjacent property as well as on the right-of-way; and there have been numerous instances where serious losses have been prevented. Henceforth employees receiving information concerning the existence of a fire are to notify the division superintendent by wire, so that the fire warden or other state, municipal or county officer may be informed. If fire were detected by railroad employees in a farm house, assistance could be summoned by the railroad from the nearest place where such facilities were at hand.

Postmaster General Burleson has replied to Mr. Peters and other critics of his position in regard to railway mail pay, giving the newspapers, for their Monday morning issues, a statement filling a column. He says that the statement issued by Mr. Peters, to the effect that the joint congressional committee had accused the officers of the post office department of ignorance and greed is erroneous; that Mr. Bourne, chairman of that committee, in making that statement was not supported by the other members of the committee. These other members publicly repudiated some of Mr. Bourne's statements. Mr. Burleson says that in the current fiscal year the railroads will have received nearly \$4,500,000 for carrying parcels in the mails; and he has recommended to Congress legislation which, when passed, will allow the roads nearly \$1,000,000 more for this special purpose. He again says that on long hauls the railroads get more from the post office department than they do from the express companies.

Railroad Laws in Texas

The bill which was discussed by the recent session of the legislature of Texas designed to give railroad employees the option of securing bonds from any desired source, regardless of the regulations of the railroad company, did not become a law. The statement published to the effect that this bill had been adopted by both houses of the legislature was erroneous; it was killed in conference on the last day of the session.

Two New Brunswick Railways to be Transferred

The Canadian Parliament has under consideration three resolutions looking to the expansion of the government railway system. The first authorizes the acquisition of any railway in Quebec, New Brunswick, Nova Scotia or Prince Edward Island, not more than 200 miles long; but no line can be taken that does not connect directly with the government system. The resolution provides for new construction, but no railway of more

than 25 miles is to be built until after a sum of money for the purpose is appropriated by Parliament. The next resolution is designed for the ratification of an agreement dated March 18, for the sale to the government of the New Brunswick & Prince Edward Island Railway, 36 miles long, Sackville to Cape Tormentine. The purchase price is \$270,000. The third resolution confirms an agreement of August 1, 1914, between the International Railway of New Brunswick and Thomas Malcolm, contractor, and the King, for the sale to the government of the whole of the company's line, from St. Leonards, N. B., near Van Buren, Me., northeast to Campbellton, N. B., 112 miles, for \$2,700,000. It is provided that the money may be paid any time within five years, and that the line may be leased to the government in the meantime at \$90,000 per annum.

Proposed Railway Legislation

The lower house of the Iowa legislature has passed its first railroad bill of the session, a bill to require railroads to provide bunk cars on stock trains for the accommodation of shippers accompanying their stock.

The bill before the Missouri legislature to require the state public service commission to make a physical valuation of the railroad property in the state, before allowing any increase in passenger fares, has been passed by the House.

Anti-Full-Crew Law Campaign

The bills to repeal full crew laws are still under discussion at the capitols of New York, New Jersey and Pennsylvania. At Albany and at Trenton amendments or substitutes have been proposed designed to make sure that the Public Service Commission shall have full authority to regulate the number of men to be employed on trains. The governor of New Jersey is understood to be opposed to the repeal of the present law, and a member of the legislature has proposed that, leaving the present law on the book, an act can be passed authorizing aggrieved railroads to appeal to the Public Utilities Commission.

R. L. O'Donnell, chairman of the committee of New Jersey and Pennsylvania Railroads, continues to publish information concerning the state of public sentiment in those states. He reports that the Reading Chamber of Commerce submitted the full-crew law question to a referendum vote, and the result is 261 votes against the law and 26 for it. The Board of Trade of Williamsport acted after a referendum vote of its members, which resulted 175 to 7. The Civic Association at Media voted 212 to 1. In Scranton, the stronghold of labor unions, the Scranton Board of Trade adopted a resolution in support of the railroad position by a vote of 100 to 12.

Arguments against repeal were heard by a committee of the legislature at Harrisburg, Pa., on Tuesday of this week. Delegations from every railroad center of the state were present and from Philadelphia there came a company of 300, who were met at the railroad station by a band and escorted to the capitol. John C. Bell, former attorney general of the state, was one of the counsel for the brotherhood. Petitions protesting against repeal were presented bearing 68,000 names. Reports of the hearing indicate that no new facts were brought out. It was argued that if the railroads should succeed in having the matter put into the hands of the Public Service Commission they would at once appeal from that commission to the courts, and in a few years they would ask for the repeal of the act creating the commission. Counsel declared that the railroads' money had better go for clothes and food for the extra trainman's family than to go into supplies; as, in either case, it would be put into circulation. William G. Lee, grand master of the Brotherhood of Railroad Trainmen, said that 11 states already had laws providing for an additional man on certain trains, and that the extra man "does more than anything that can be devised to prevent accidents" to trainmen.

Summary of Revenues and Expenses of Large Steam Roads

The following figures were compiled by the Interstate Commerce Commission from monthly reports of operating revenues and expenses of large steam roads for January, 1915. No reports are included for roads whose operating revenues for the year ended June 30, 1914, did not reach \$1,000,000.

including rate fixing, printed forms, and clerical organization, etc., for work in paint shops.

No. 5: What is the most practical and economical method of maintaining the inside of steel passenger cars?

Essay No. 1: The possible results, where price v. quality is enforced in buying paint for the car and locomotive paint shop.

Item	FOR THE MONTH OF JANUARY											
	United States			Eastern District			Southern District			Western District		
	Amount	Per mile of road operated	1915	Amount	Per mile of road operated	1915	Amount	Per mile of road operated	1915	Amount	Per mile of road operated	1915
Average number of miles operated	228,689.57	...	...	58,839.58	...	...	42,359.56	...	...	127,490.43	...	...
Revenues:												
Freight	\$147,375,039	\$644	\$697	\$63,701,321	\$1,083	\$1,164	\$24,130,378	\$570	\$662	\$59,543,340	\$467	\$490
Passenger	45,526,999	199	226	19,837,316	337	358	6,792,597	160	199	18,897,086	148	174
Mail	4,759,285	21	18	1,729,584	29	21	626,790	15	15	2,402,911	19	17
Express	5,670,566	25	24	2,652,538	45	38	876,393	20	25	2,141,635	17	17
All other transportation	6,069,737	26	27	3,324,697	56	52	509,624	12	14	2,235,416	17	20
Incidental	4,613,522	20	20	2,406,610	41	35	651,337	15	17	1,555,575	12	14
Joint Facility—Cr.	281,136	1	1	121,200	2	2	57,457	1	1	102,479	1	1
Joint Facility—Dr.	99,498	...	...	59,501	1	...	15,084	...	...	24,913	...	...
Railway operating revenues	\$214,196,786	\$936	*\$1,021	\$93,713,765	\$1,592	*\$1,700	\$33,629,492	\$793	\$933	\$86,853,529	\$681	\$733
Expenses												
Maint. of way and structures	\$23,950,566	\$105	\$126	\$10,706,056	\$182	\$212	\$4,154,531	\$98	\$117	\$9,089,979	\$71	\$89
Maintenance of equipment	40,401,262	177	190	19,390,315	330	350	6,304,342	149	180	14,706,605	115	119
Traffic	4,811,581	21	23	1,782,957	30	32	909,335	21	24	2,119,289	17	17
Transportation	86,937,730	380	418	40,250,303	684	762	12,514,606	295	344	34,172,821	268	282
Miscellaneous operations	1,842,720	8	8	905,710	15	13	193,755	5	5	743,255	6	7
General	6,229,785	27	29	2,660,838	45	47	990,809	23	25	2,578,138	20	22
Transportat'n for Investm't—Cr.	404,423	2	1	84,508	1	...	106,931	2	...	212,984	2	1
Railway operating expenses	\$163,769,221	\$716	*\$795	\$75,611,671	\$1,285	*\$1,425	\$24,960,447	\$589	\$695	\$63,197,103	\$495	\$535
Net revenue from railway operations	\$50,427,565	\$220	\$226	\$18,102,094	\$307	\$275	\$8,669,045	\$204	\$238	\$23,656,426	\$186	\$198
Railway tax accruals	\$11,213,928	\$49	\$50	\$4,713,260	\$80	\$80	\$1,588,631	\$38	\$37	\$4,912,037	\$39	\$39
Uncollectible railway revenues	39,419	...	...	11,874	...	...	7,191	...	...	20,354	...	...
Railway operating income	\$39,174,218	\$171	\$176	\$13,376,960	\$227	\$195	\$7,073,223	\$166	\$201	\$18,724,035	\$147	\$159

*Includes all unclassified items.

Item	FOR THE SEVEN MONTHS ENDING WITH JANUARY											
	1915	1915	1914	1915	1915	1914	1915	1915	1914	1915	1915	1914
	Average number of miles operated	228,295.58	...	...	58,757.18	...	...	42,287.68	...	...	127,250.72	...
Revenues:												
Freight	\$1,185,096,216	\$5,191	\$5,649	\$510,999,792	\$8,697	\$9,529	\$177,823,150	\$4,205	\$4,759	\$496,273,274	\$3,900	\$4,128
Passenger	389,236,491	1,705	1,906	171,753,050	2,923	3,161	52,843,477	1,250	1,450	164,639,964	1,294	1,470
Mail	33,322,640	146	137	12,123,777	206	195	4,389,324	104	103	16,809,539	132	121
Express	40,854,194	179	199	18,428,694	314	348	6,122,987	145	162	16,302,513	128	142
All other transportation	49,159,709	215	229	27,400,485	466	473	3,898,494	92	107	17,860,730	140	155
Incidental	34,879,639	153	162	18,244,089	310	311	4,183,705	99	111	12,451,845	98	109
Joint Facility—Cr.	2,100,354	9	9	946,614	16	15	407,103	9	9	746,637	6	6
Joint Facility—Dr.	742,319	3	3	469,036	8	7	91,293	2	2	181,990	1	1
Railway operating revenues	\$1,733,906,924	\$7,595	*\$8,307	\$759,427,465	\$12,924*	\$14,098	\$249,576,947	\$5,902	\$6,699	\$724,902,512	\$5,697	\$6,130
Expenses:												
Maint. of way and structures	\$216,742,662	\$950	\$1,097	\$91,696,489	\$1,561	\$1,861	\$34,268,742	\$810	\$895	\$90,777,431	\$714	\$807
Maintenance of equipment	297,411,403	1,302	1,419	139,314,607	2,371	2,628	48,677,032	1,151	1,254	109,419,764	860	907
Traffic	34,476,471	151	166	13,056,531	222	255	6,541,776	155	156	14,878,164	117	128
Transportation	611,621,809	2,679	2,948	284,212,899	4,837	5,375	87,634,987	2,072	2,296	239,773,923	1,884	2,028
Miscellaneous operations	13,715,387	60	67	6,484,952	110	112	1,273,106	30	33	5,957,329	47	58
General	43,114,503	189	194	18,286,124	311	313	6,968,462	165	170	17,859,917	140	146
Transportat'n for Investm't—Cr.	4,035,375	17	9	432,104	7	...	796,372	18	2	2,806,899	22	16
Railway operating expenses	\$1,213,046,860	\$5,314	*\$5,891	\$552,619,498	\$9,405*	\$10,580	\$184,567,733	\$4,365	\$4,801	\$475,859,629	\$3,740	\$4,058
Net revenue from railway operations	\$520,860,064	\$2,281	\$2,416	\$206,807,967	\$3,519	\$3,518	\$65,009,214	\$1,537	\$1,898	\$249,042,883	\$1,957	\$2,072
Railway tax accruals	\$78,083,997	\$342	\$350	\$32,050,456	\$545	\$559	\$10,883,774	\$257	\$260	\$35,149,767	\$276	\$282
Uncollectible railway revenues	288,602	1	...	108,288	2	...	46,074	1	...	134,240	1	...
Railway operating income	\$442,487,465	\$1,938	\$2,066	\$174,649,223	\$2,972	\$2,959	\$54,079,366	\$1,279	\$1,638	\$213,758,876	\$1,680	\$1,790

*Includes all unclassified items.

Master Car and Locomotive Painters' Association

The advisory committee of the Master Car and Locomotive Painters' Association has selected the following subjects and queries for the next convention, which will be held at Detroit, Mich., September 14 to 16:

Subject No. 1: Flat color v. enamel color—which gives the best results under varnish in durability and permanency of color?

No. 2: Can we suggest any changes in the design or construction of steel passenger train cars to make them better fitted for preservation by protective coatings?

No. 3: Will equipment finished in enamel or varnish color wear and "clean up" in service as easily and economically as the varnish finish?

No. 4: Best methods of taking care of piece-work accounts,

No. 2: The official recognition due the efficient railway master car and locomotive painter.

Query No. 1: Are we having any serious trouble with varnish turning white, and if so, with what grade of varnish?

No. 2: Is there any way by which a greater field can be covered by the association without increasing the time consumed in handling the work?

No. 3: Of what value to the railway companies is ornamentation of the exterior of railway passenger equipment?

Railway Signal Association

The board of direction announces that the regular meeting of the Railway Signal Association will be held at Hotel Astor, Broadway and Forty-fourth street, New York City, on Wednes-

day and Thursday, May 26 and 27; and that the annual convention of the association will be held at Salt Lake City, Utah, beginning September 14.

MEETINGS AND CONVENTIONS

The following list gives names of secretaries, dates of next or regular meetings, and places of meeting.

AIR BRAKE ASSOCIATION.—F. M. Nellis, 53 State St., Boston, Mass. Next convention, May 4-7, 1915, Hotel Sherman, Chicago.

AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—A. G. Thomason, Demurrage Commissioner, 845 Old South Bldg., Boston, Mass. Annual convention, March 23, Jefferson Hotel, Richmond, Va.

AMERICAN ASSOCIATION OF DINING CAR SUPERINTENDENTS.—H. C. Boardman, D. L. & W., Hoboken, N. J. Next meeting, October 21-23, 1915, Boston, Mass.

AMERICAN ASSOCIATION OF FREIGHT AGENTS.—R. O. Wells, Illinois Central, East St. Louis, Ill. Annual meeting, May 18-21, 1915, Richmond, Va.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York. Next meeting, April 15-16, San Francisco, Cal.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—E. H. Harman, Room 101, Union Station, St. Louis, Mo. Next meeting, August 19-20, 1915, San Francisco, Cal.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—E. B. Burritt, 29 W. 39th St., New York. Annual convention, October 4-8, 1915, San Francisco, Cal.

AMERICAN ELECTRIC RAILWAY MANUFACTURERS' ASSOCIATION.—H. G. McConaughy, 165 Broadway, New York. Meetings with American Electric Railway Association.

AMERICAN RAILROAD MASTER TINNERS, COPPERSMITHS AND PIPEFITTERS' ASSOCIATION.—W. E. Jones, C. & N. W., 3814 Fulton St., Chicago. Annual meeting, July 13-16, 1915, Hotel Sherman, Chicago.

AMERICAN RAILWAY ASSOCIATION.—W. F. Allen, 75 Church St., New York. Next session, May 19, 1915, New York.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W., Chicago. Next convention, October 19-21, 1915, Detroit, Mich.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—E. H. Fritch, 900 S. Michigan Ave., Chicago. Next convention, March, 1916, Chicago.

AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—J. W. Taylor, 1112 Karpen Bldg., Chicago. Annual meeting, June 9-11, 1915, Atlantic City, N. J.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—Owen D. Kinsey, Illinois Central, Chicago. Annual meeting, July 19-21, 1915, Hotel Sherman, Chicago.

AMERICAN SOCIETY FOR TESTING MATERIALS.—Prof. E. Marburg, University of Pennsylvania, Philadelphia, Pa. Annual meeting, June 22-26, 1915, Hotel Traymore, Atlantic City, N. J.

AMERICAN SOCIETY OF CIVIL ENGINEERS.—Chas. Warren Hunt, 220 W. 57th St., New York. Regular meetings, 1st and 3d Wednesday in month, except July and August, 220 W. 57th St., New York.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York. Next spring meeting, June 22-25, 1915, Buffalo, N. Y. Annual meeting, December 7-10, 1915, New York.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—F. J. Angier, Supt. Timber Preservation, B. & O., Mt. Royal Sta., Baltimore, Md. Next convention, January 18-20, 1916, Chicago.

ASSOCIATION OF AMERICAN RAILWAY ACCOUNTING OFFICERS.—E. R. Woodson, 1300 Pennsylvania Ave., N. W., Washington, D. C. Annual convention, April 28, 1915, Piedmont Hotel, Atlanta, Ga.

ASSOCIATION OF MANUFACTURERS OF CHILLED CAR WHEELS.—George W. Lyndon, 1214 McCormick Bldg., Chicago. Annual meeting, 2d Tuesday in October, 1915, New York.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—C. W. Egan, B. & O., Baltimore, Md. Annual meeting, May, 1915, Galveston, Tex.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreuccetti, C. & N. W., Room 411, C. & N. W. Sta., Chicago. Semi-annual meeting with Master Car Builders' and Master Mechanics' Association. Annual meeting, October, 1915.

ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—P. W. Drew, Soo Line, 112 West Adams St., Chicago. Annual meeting, June 22-25, 1915, Rochester, N. Y.

ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—G. P. Conrad, 75 Church St., New York. Next meeting, June 22-23, Niagara Falls, N. Y.

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—L. D. Mitchell, Detroit Graphite Co., Chicago, Ill. Meetings with American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—James Powell, Grand Trunk, P. O. Box 7, St. Lambert (near Montreal), Que. Regular meetings, 2d Tuesday in month, except June, July and August, Windsor Hotel, Montreal, Que.

CANADIAN SOCIETY OF CIVIL ENGINEERS.—Clement H. McLeod, 176 Mansfield St., Montreal, Que. Regular meetings, 1st Thursday in October, November, December, February, March and April. Annual meeting, January, Montreal.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 841 Lawlor Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August, Hotel La Salle, Chicago.

CENTRAL RAILWAY CLUB.—H. D. Vought, 95 Liberty St., New York. Regular meetings, 2d Friday in January, May, September and November. Annual meeting, 2d Thursday in March, Hotel Statler, Buffalo, N. Y.

ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.—Elmer K. Hiles, 2511 Oliver Bldg., Pittsburgh, Pa. Regular meetings, 1st and 3d Tuesday, Pittsburgh.

FREIGHT CLAIM ASSOCIATION.—Warren P. Taylor, R. F. & P., Richmond, Va. Annual meeting, June 16, 1915, Chicago.

GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—A. M. Hunter, 321 Grand Central Station, Chicago. Regular meetings, Wednesday, preceding 3d Thursday in month, Room 1856, Transportation Bldg., Chicago.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—C. G. Hall, C. & E. I., 922 McCormick Bldg., Chicago. Annual meeting, May 17-20, 1915, Hotel La Salle, Chicago.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1126 W. Broadway, Winona, Minn. Next convention, July 13-16, 1915, Sherman House, Chicago.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—A. L. Woodworth, C. H. & D., Lima, Ohio. Annual meeting, August 17, 1915, Philadelphia, Pa.

MAINTENANCE OF WAY AND MASTER PAINTERS' ASSOCIATION OF THE UNITED STATES AND CANADA.—T. I. Goodwin, C. R. I. & P., Eldon, Mo. Next meeting, October 19-21, 1915, St. Louis, Mo.

MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 95 Liberty St., New York. Annual convention, May 23 to 28, 1915, Chicago, Ill.

MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOCIATION OF THE UNITED STATES AND CANADA.—A. P. Dane, B. & M., Reading, Mass. Next convention, September 14-17, 1915, Detroit, Mich.

MASTER CAR BUILDERS' ASSOCIATION.—J. W. Taylor, 1112 Karpen Bldg., Chicago. Annual meeting, June 14-16, 1915, Atlantic City, N. J.

NATIONAL RAILWAY APPLIANCES ASSOCIATION.—Bruce V. Crandall, 537 So. Dearborn St., Chicago. Next convention, March, 1916, Chicago.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, 2d Tuesday in month, except June, July, August and September, Boston.

NEW YORK RAILROAD CLUB.—Harry D. Vought, 95 Liberty St., New York. Regular meetings, 3d Friday in month, except June, July and August, 29 W. 39th St., New York.

NIAGARA FRONTIER CAR MEN'S ASSOCIATION.—E. N. Frankenberger, 623 Braddock Bldg., Buffalo, N. Y. Meetings 3d Wednesday in month, New York Telephone Bldg., Buffalo, N. Y.

PEORIA ASSOCIATION OF RAILROAD OFFICES.—M. W. Rotchford, 410 Masonic Temple Bldg., Peoria, Ill. Regular meetings, 3d Thursday in month, Jefferson Hotel, Peoria.

RAILROAD CLUB OF KANSAS CITY.—C. Manlove, 1008 Walnut St., Kansas City, Mo. Regular meetings, 3d Friday in month, Kansas City.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 30 Church St., New York. Annual meeting, December, 1915, Waldorf-Astoria Hotel, New York.

RAILWAY CLUB OF PITTSBURGH.—J. B. Anderson, Room 207, P. R. R. Sta., Pittsburgh, Pa. Regular meetings, 4th Friday in month, except June, July and August, Monongahela House, Pittsburgh.

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—J. Scribner, 1063 Monadnock Block, Chicago. Meetings with Association of Railway Electrical Engineers.

RAILWAY FIRE PROTECTION ASSOCIATION.—C. B. Edwards, Fire Ins. Agt., Mobile & Ohio, Mobile, Ala. Next meeting, October 5-7, 1915, Chicago.

RAILWAY SIGNAL ASSOCIATION.—C. C. Rosenberg, Myers Bldg., Bethlehem, Pa. Stated meeting, May 26-27, 1915, New York. Annual meeting, September 14-17, 1915, Salt Lake City, Utah.

RAILWAY STOREKEEPERS' ASSOCIATION.—J. P. Murphy, L. S. & M. S., Box C, Collinwood, Ohio. Annual meeting, May 17-19, 1915, Hotel Sherman, Chicago.

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 2136 Oliver Bldg., Pittsburgh, Pa. Meetings with Master Car Builders and Master Mechanics' Associations.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, 50 Church St., New York. Meetings with Association of Railway Telegraph Superintendents.

RICHMOND RAILROAD CLUB.—F. O. Robinson, C. & O., Richmond, Va. Regular meetings, 2d Monday in month, except June, July and August.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—L. C. Ryan, C. & N. W., Sterling, Ill. Annual meeting, September 14-16, 1915, Chicago.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August, St. Louis.

SALT LAKE TRANSPORTATION CLUB.—R. E. Rowland, Hotel Utah Bldg., Salt Lake City, Utah. Regular meetings, 1st Saturday of each month, Salt Lake City.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, 3868 Park Ave., New York. Meeting with annual convention Railway Signal Association.

SOCIETY OF RAILWAY FINANCIAL OFFICERS.—Carl Nyquist, C. R. J. & P. La Salle St. Sta., Chicago. Annual meeting, September, 1915.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—E. W. Sandwich, A. & W. P. R. R., Atlanta, Ga. Next meeting, 3d Thursday in July, 1915, Atlanta. Annual meeting, January, 1916.

SOUTHERN & SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, Grant Bldg., Atlanta, Ga. Regular meetings, 3d Thursday, January, March, May, July, September, November, 10 A. M., Piedmont Hotel, Atlanta.

TOLEDO TRANSPORTATION CLUB.—Harry S. Fox, Toledo, Ohio. Regular meetings, 1st Saturday in month, Boddy House, Toledo.

TRUCK SUPPLY ASSOCIATION.—W. C. Kidd, Ramapo Iron Works, Hillburn, N. Y. Meetings with Roadmasters' and Maintenance of Way Association.

TRAFFIC CLUB OF CHICAGO.—W. H. Wharton, La Salle Hotel, Chicago.

TRAFFIC CLUB OF NEWARK.—John J. Kautzmann, P. O. Box 238, Newark, N. J. Regular meetings, 1st Monday in month, except July and August, The Washington, Newark.

TRAFFIC CLUB OF NEW YORK.—C. A. Swope, 291 Broadway, New York. Regular meetings last Tuesday in month, except June, July and August, Waldorf-Astoria, New York.

TRAFFIC CLUB OF PITTSBURGH.—D. L. Wells, Genl. Agt., Erie R. R., 1924 Oliver Bldg., Pittsburgh, Pa. Meetings bi-monthly, Pittsburgh. Annual meeting, 2d Monday in June.

TRAFFIC CLUB OF ST. LOUIS.—A. F. Versen, Mercantile Library Bldgs., St. Louis, Mo. Annual meeting in November. Noonday meetings October to May.

TRAIN DISPATCHERS' ASSOCIATION OF AMERICA.—J. F. Mackie, 7122 Stewart Ave., Chicago. Annual meeting June 15, 1915, Minneapolis, Minn.

TRANSPORTATION CLUB OF DETROIT.—W. R. Hurley, Superintendent's office, N. Y. C. R. R., Detroit, Mich. Meetings monthly, Normandie Hotel, Detroit.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, N. Y. C. R. R., East Buffalo, N. Y. Annual meeting, September 7-10, 1915, Chicago.

UTAH SOCIETY OF ENGINEERS.—Frank W. Moore, 1111 Newhouse Bldg., Salt Lake City, Utah. Regular meetings, 3d Friday in month, except July and August, Salt Lake City.

WESTERN CANADA RAILWAY CLUB.—L. Kon, Immigration Agent, Grand Trunk Pacific, Winnipeg, Man. Regular meetings, 2d Monday, except June, July and August, Winnipeg.

WESTERN RAILWAY CLUB.—J. W. Taylor, 1112 Karpen Bldg., Chicago. Regular meetings, 3d Tuesday in month, except June, July and August, Karpen Bldg., Chicago.

WESTERN SOCIETY OF ENGINEERS.—J. H. Warder, 1735 Monadnock Block, Chicago. Regular meetings, 1st Monday in month, except January, July and August, Chicago. Extra meetings, except in July and August, generally on other Monday evenings. Annual meeting, 1st Wednesday after 1st Thursday in January, Chicago.

Traffic News

The Canadian Northern announces that its line between Port Arthur and Ruel will be open on May 1 for freight traffic. It is expected to put on regular passenger trains by June 7.

The meeting of the National Industrial Traffic League, announced to be held at Memphis, Tenn., on April 8 and 9, has been postponed to a date to be announced later, probably about the middle of May.

The Chicago, St. Louis & Gulf Transportation Company has announced that service between LaSalle, Ill., and New Orleans, La., will be established on May 1 via the Illinois and Mississippi rivers, with a fleet of steel barges and power boats.

President Bush of the Missouri Pacific is reported to have announced that the railroads in Missouri would appeal to the courts in their efforts to get increased intrastate freight and passenger rates if the increase is not granted by the public service commission.

The Agricultural Department announces that the foot-and-mouth disease has been brought under control in all places throughout the country, except in New York and Pennsylvania. Illinois has been the greatest sufferer from the epidemic, 57,388 animals having been killed in that state; while the number killed in Pennsylvania was 22,958; in New York, 5,727; in Michigan, 7,799; Indiana, 6,643; Wisconsin, 4,704, and Iowa, 3,896.

A bill has been introduced in the Illinois legislature requiring the railroads to publish their time tables in the newspapers. A similar bill was presented at the present session of the Nebraska legislature. The railroads had no trouble in defeating it by having a representative publisher appear in opposition before the railroad commission. He said that the honest and intelligent publishers in the state did not favor the measure and offered to produce, if necessary, many other newspaper men who would testify to the same effect.

Commercial and civic associations in 93 Illinois cities and towns before whom the Illinois railroad officers have presented their arguments in favor of an increase in passenger fares from 2 to 2½ cents a mile, have adopted resolutions endorsing the application of the railroads and have forwarded copies to their representatives in the general assembly. The substance of these resolutions is that on proper showing by the railroads that the proposed higher rate is reasonable, the general assembly will be expected to grant the request. In addition, over 75,000 voters of the state, outside of Chicago, have signed petitions addressed to the general assembly, asking that the increase in fares be granted.

A lively controversy has been aroused in the Michigan legislature by an interview given by C. S. Cunningham, a member of the state railroad commission, published in a full-page advertisement in the Lansing State Journal of March 22, in which he said the railroads would be justified in taking off one-third of their passenger trains if an increase in state passenger fares is denied. Representative Symonds introduced in the legislature a resolution, which was passed, requesting the individual members of the commission to communicate with the house at the earliest opportunity whether such statement by Cunningham meets with the approbation of the commission and represents the views and attitude of the commissioners.

Traffic Club of Chicago

At the annual election of the Traffic Club of Chicago on March 30, the following officers were elected for the ensuing year: President, Fred Zimmerman, vice-president, Chicago, Indianapolis & Louisville; first vice-president, F. L. Bateman, president, Transcontinental Freight Company; second vice-president, W. O. Davis, division freight agent, American Steel & Wire Company; third vice-president, W. J. Leahy, general passenger agent, Chicago, Rock Island & Pacific; secretary, W. H. Wharton, commercial agent, Nashville, Chattanooga & St. Louis; treasurer, Charles B. Hopper, general freight agent, Goodrich Transit Company.

Commission and Court News

INTERSTATE COMMERCE COMMISSION

Complaint Dismissed

Public Utilities Commission of Idaho v. Oregon Short Line et al. Opinion by Commissioner Clark:

The commission finds that the carriers' rates on bituminous coal in carloads from Kemmerer and Rock Springs, Wyo., to points in southern Idaho, are not unreasonable. (33 I. C. C., 103.)

New York Central's Reicing Rule Held Reasonable

Providence Fruit & Produce Exchange v. New York Central & Hudson River. Opinion by the commission:

The commission finds reasonable the carrier's rule reading: "Shippers must state at what points cars shall be reiced, if reicing is desired or necessary, and the percentage of salt, if to be used in connection with such icing." (31 I. C. C., 294.)

Rates on Grain and Grain Products to Kansas, Oklahoma and Other States

Opinion by the commission:

The commission finds that the carriers have justified proposed increased rates on grain and grain products from points on the Minneapolis & St. Louis in Iowa and Minnesota to points on the Chicago, Rock Island & Pacific in the southwest. (33 I. C. C., 374.)

Rates on Lumber from Wisconsin, Minnesota and Michigan

Northern Pine Manufacturers' Association et al. v. Chicago & North Western et al. Opinion by Commissioner Daniels:

The commission finds that the rates on lumber from producing points in Wisconsin, Minnesota and Michigan to upper and lower Missouri river crossings are not unreasonable or discriminatory. (33 I. C. C., 360.)

Complaint Dismissed

New England Coal & Coke Company v. Norfolk & Western et al. Opinion by the commission:

The commission finds that the Norfolk & Western is carrying on an entirely lawful practice in making a charge for dumping coal into boats from its piers in the harbors of Norfolk and Newport News, Va., in addition to the regular transportation rate applying to the port on business destined beyond the Virginia capes. (33 I. C. C., 276.)

High Explosives Rates on the Louisville & Nashville

E. I. Du Pont De Nemours Powder Company v. Louisville & Nashville. Opinion by the commission:

High explosives are rated in southern classification first class C. L. and double first class L. C. L. The commission finds that the exception to the classification in the tariffs of the Louisville & Nashville and the Lexington & Eastern providing a double first class rate on high explosives in any quantity is unreasonable in so far as shipments of this commodity in carloads are rated higher than first class. (33 I. C. C., 288.)

Rates on Wire Fence from Adrian, Mich.

Adrian Wire Fence Company et al. v. Lake Shore & Michigan Southern et al. Opinion by Commissioner Clements:

It is alleged that the carload rates on wire from Pittsburgh to Adrian, Mich., and on wire fence from the latter point to Chicago are unreasonable and disadvantageous to Adrian. The commission, following its decision in *Delphos Manufacturing Company v. Pennsylvania Company* (33 I. C. C., 400), is unable to require the carriers to grant Adrian proportional rates from Pittsburgh and to Chicago equal to the through rates from Pittsburgh to Chicago, with a reasonable charge for the privilege of unloading and reloading at Adrian. It is held, however, that the grouping of Adrian with Detroit on traffic from Pitts-

burgh subjects it to disadvantage and that the rate on wire from Pittsburgh to Adrian should not exceed the rate to Toledo by more than one cent a 100 lb. (33 I. C. C., 403.)

Rates on Fish from California to Eastern Points

G. W. Hume Company et al. v. Southern Pacific et al. Opinion by Commissioner Harlan:

The commission finds that carriers' refrigeration charge of \$70 per car on salted or pickled fish in carloads from San Francisco and other points in California to New York and other eastern points is not unreasonable. This charge of \$70 is in addition to the rate of \$1 per 100 lb. for fish moving under refrigeration, the rate being 85 cents on fish when not under refrigeration. (33 I. C. C., 126.)

The Carrying of Coal for Use on Ships Not Export Business

Basin Supply Company v. Texarkana & Fort Smith. Opinion by the commission:

The commission finds that defendant's demurrage regulations relative to the free time allowance on bunker coal at Port Arthur, Tex., are not unreasonable or discriminatory. The carrying of coal for use as fuel and to be consumed by a vessel engaged in coastwise or foreign trade does not constitute a coastwise or export movement of that commodity. (33 I. C. C., 157.)

Rates on Agricultural Implements from California Points

In re rates on agricultural implements from San Francisco, Stockton, and other points to Spokane and other points. Opinion by the commission:

The commission finds that the carriers have justified a proposed cancellation of proportional carload and less-than-carload-rates on agricultural implements from Stockton, Cal., to Portland and East Portland, Ore., when destined to points beyond, resulting in increased rates, and an increase in the carload minimum from 20,000 to 24,000 lb. (33 I. C. C., 119.)

Classification of Address Plates, Culverts and Iron or Steel Tanks

Opinion by the commission:

The proposed rating of first class on address plates, in Supplement No. 4 to Southern Classification No. 40, is found not to be justified and respondents are required to establish a rating not to exceed second class. Proposed changes in the same supplement with reference to the classification on tanks (iron or steel, not otherwise indexed by name), and culverts are found to be justified. (33 I. C. C., 281.)

Rates on Tanning Extracts from Knoxville to Points in Michigan

Tanners' Supply Company, Ltd., v. Louisville & Nashville et al. Opinion by Commissioner Meyer:

The commission finds that the rates on liquid tanning extract in tank cars from Knoxville, Tenn., to Michigan destinations are not unreasonable per se, or discriminatory as compared with the rates from Knoxville to points in Illinois, Wisconsin, New York, Pennsylvania and Ontario. It is also found that the rating of fifth-class for liquid tanning extract in official classification territory is not unjust, in so far as can be determined from the evidence in the instant case. (32 I. C. C., 394.)

Joint Rates Between Rail and Water Lines

Chattanooga Packet Company v. Illinois Central et al. Opinion by Commissioner Meyer:

The Chattanooga Packet Company proposes to re-establish its former boat service on the Ohio and Tennessee rivers between Chattanooga, Tenn., and Joppa, Brookport and Metropolis, Ill. It alleges, however, that the railways discriminate against it in that on traffic routed via the rail carriers connecting Chattanooga with the Ohio river, they apply proportional class and commodity rates to and from the Ohio river crossings, but on that routed via the complainant's boat lines, they apply the local rates to and from the river points at which the interchange is made, which are upon a higher basis than the proportional rates.

The commission finds that defendants by restricting the application of their proportional rates discriminate against the complainant as alleged and against shippers who desire to route their goods over complainant's boat lines. The defendants are

therefore required to apply the same rates to traffic between Chattanooga and points north of the Ohio river routed via Brookport, Metropolis and Joppa and complainant's boat lines as they contemporaneously apply on traffic routed via their southern rail connections. The carriers by rail may make a reasonable charge to cover the additional expense, if any, of interchange with boat lines over and above the cost of interchange with rail carriers. The commission in reaching its decision holds that a proportional rate, the use of which is limited to shipments over a particular line is discriminatory. It also holds that the fact that the proportional rates to and from the Ohio river are compelled by competition can have no bearing upon its determination of the issue of unjust discrimination and believes that if carriers are permitted to apply higher rates for the same service on traffic routed over connecting water lines, than on traffic routed all rail, they will be in a position to destroy all water competition and to deprive shippers of the advantage of their location upon navigable waters. (33 I. C. C., 384.)

Rates on Coke from Chicago and Peoria to St. Paul, Duluth and Other Points

Opinion by Commissioner Daniels:

The commission finds that the carriers have justified proposed increased rates on coke in carloads from St. Louis, Mo., Chicago, Waukegan and Peoria, Ill., and Milwaukee and other points in Wisconsin and Menominee, Mich., to points in Minnesota other than Duluth and in Wisconsin, Iowa and South Dakota. Proposed increased rates on the same commodity from the same points of origin to Duluth, Minn., are held unreasonable to the extent that they exceed \$2.15 per ton. (32 I. C. C., 543.)

Cement Rates from Salt Lake City

In re cement rates from Salt Lake City, Utah, and other points to Butte, Mont., and other destinations. Opinion by Commissioner Clements:

The commission finds that the carriers have not justified proposed increased rates on cement in carloads from Salt Lake City, Bakers, and Devils Slide, Utah, to Wapello, Idaho, Butte, Mont., and intermediate points on the Oregon Short Line; Anaconda, Mont., on the Butte, Anaconda & Pacific and Helena, and other Montana points on the Great Northern and Northern Pacific. (33 I. C. C., 5.)

Transit of Beans at Saginaw and Jackson, Mich.

Saginaw Milling Company et al. v. Michigan Central et al. Opinion by Commissioner Daniels:

The commission finds that defendants' rules and charges applying on transit of beans at Saginaw and Jackson, Mich., are not unreasonable or otherwise unlawful. It is also held that the withdrawal by defendants of their transit privileges on dried beans at these points upon complainants' refusal to cancel billing to cover the local disposition of transit tonnage, was in accordance with the tariff requirements, and not unreasonable or otherwise unlawful. (33 I. C. C., 25.)

Grain Rates from Milwaukee

Opinion by Commissioner Clark:

The carriers proposed to cancel the so-called reshipping rates on grain and grain products applying from Milwaukee, Wis., via Manitowoc, Wis., and via Chicago to points in central freight association and trunk line territories. If the cancellations were made as proposed, the reshipping rates would still be available directly from Milwaukee and Manitowoc across Lake Michigan via car ferry and joint through rates from Milwaukee via Manitowoc and via Chicago higher than the reshipping rates would also apply.

As it is a fundamental principle in rate making that differences in distance between producing points or markets gradually lose their effect as the distance to destination increases, the commission believes that a distinction may properly be made as between the rates on grain and grain products from Milwaukee via Chicago or Manitowoc to central freight association points west of Buffalo and Pittsburgh, and points taking the same rates, on the one hand, and Buffalo, Pittsburgh and points taking the same rates, and points east thereof, on the other hand. It holds that the carriers have justified the proposed withdrawal

to points in central freight association territory, but that they have not justified withdrawal of the rates to points in trunk line territory, including Buffalo and Pittsburgh and points taking the same rates.

The principal reason advanced in support of the proposed charge was that the revenue of respondents under existing schedules was unsatisfactory. The commission holds it to be essential that Chicago and Milwaukee as grain markets be kept on a substantial parity of rates. They are but 85 miles apart, both are Lake Michigan ports, both are served in common by carriers from the west and from the east, and the commission can not recognize disagreement between the carriers as to how the earnings shall be divided or as to which of them shall perform certain services as justification for disrupting that parity. (33 I. C. C., 417.)

Rates on Black-Iron Sheets

Delphos Manufacturing Company v. Pennsylvania Company.
Opinion by Commissioner Clements:

The commission finds that the rates on black-iron sheets from Pittsburgh to Delphos, O., and on galvanized iron sheets from Delphos to Chicago and beyond are not unreasonable or prejudicial.

The basis for complaint was that the combination of rates named above exceeded the through rate from Pittsburgh to Chicago applicable on either of the commodities named by more than a reasonable amount or by more than a reasonable charge for the additional terminal service at Delphos. The commission finds that to fix the rates as suggested would be to take into consideration only the distance without regard to competitive influences which may have fixed the Pittsburgh-Chicago rate at a figure lower than the commission, upon investigation, would prescribe as the maximum of reasonableness. (33 I. C. C., 400.)

Minimum Charges on Bulky Articles

Opinion by Commissioner McChord:

The commission after an investigation into the reasonableness of the application of rule 7 B and C of official classification No. 42; rule 26, section 3, of southern classification No. 40; and rule 17 B of western classification No. 50, restated as rule 20 B in western classification No. 53, relating to minimum charges on articles too long or too bulky to be loaded through the side doors of box cars, holds that carriers should restate these rules embodying these provisions: Unless otherwise provided, a shipment containing articles the dimensions of which do not permit loading through the center side doorway 6 ft. wide by 7 ft. 6 in. high without the use of end door or window in a closed car not more than 36 ft. in length by 8 ft. 6 in. wide and 8 ft. high shall be charged at actual weight and authorized rating subject to a minimum charge of 4,000 lb. at the first-class rate for the entire shipment. (33 I. C. C., 378.)

Rates on Sand Glass from Ottawa, Ill., to Cincinnati

Charles Boldt Company v. Chicago, Rock Island & Pacific et al.
Opinion by the commission:

The commission in its previous report in this case found that a rate of \$1.80 a net ton on glass sand from Ottawa, Ill., to Cincinnati, Ohio, was unreasonable to the extent that it exceeded \$1.60 a net ton. The commission, in view of the fact that the carriers in official classification territory have been allowed a general increase of 5 per cent in some of their rates, now finds that the carriers may establish a rate of \$1.80 on this traffic. Rates on glass sand from Ottawa to certain other points in Ohio are, however, found unreasonable and rates are prescribed as follows: To Columbus and Mount Vernon, \$2 (now \$2.18); to Zanesville and Lancaster, \$2.20 (now \$2.40), and to Barnesville, \$2.40 (now \$2.60). (33 I. C. C., 8.)

Rates on Sash and Doors

Anson, Gilkey & Hurd Company et al. v. Southern Pacific et al.
Opinion by Commissioner Meyer:

The complainants allege that the rates on sash and doors from their manufacturing plants in Wisconsin, Iowa and Illinois to points in central freight association and trunk line terri-

ties are unreasonable and discriminatory when compared with rates from points on the Pacific coast to the same destinations. They also attack as unreasonable the rates on lumber in carloads from California, Oregon and Washington, and from the territory known as the "inland empire" to the points where their plants are located. The commission finds that the rates attacked are not unreasonable, but that there is discrimination with respect to the classification of lumber and lumber products, especially sash and doors, in the various competing territories here involved. The railways are therefore given 90 days in which to work out tariffs which will bring about greater uniformity in this regard. (33 I. C. C., 332.)

Trap Car Hearing

Examiner George N. Brown of the Interstate Commerce Commission began a hearing at Chicago on March 25, on the tariffs filed by the railways proposing a charge of four cents per 100 lb. for trap car service. Similar hearings have been held at Pittsburgh, Cincinnati, St. Louis and Kansas City. The first day's hearing at Chicago was devoted to testimony of shippers regarding the situation at eight different cities outside of Chicago, as to which no representatives appeared for the railroads. E. C. Lindley, general attorney of the Great Northern, and Charles Donnelly, attorney for the Northern Pacific, appeared and arranged for a hearing as to the situation at the Twin Cities on Tuesday of this week, and W. D. McHugh appeared for the Pennsylvania Lines and the western railroads as to the Chicago situation, which was taken up at the hearing on Friday, March 26. At the other hearings the carriers presented very little evidence. Protesting shippers were represented by John S. Burchmore, attorney for the National Industrial Traffic League, and by H. C. Barlow, W. L. Fisher and Rush C. Butler, appearing for the Chicago Association of Commerce and the Central Manufacturing district.

At the hearing on Thursday as to cities outside of Chicago, H. D. Cherry of the Kewanee Boiler Company, Kewanee, Ill., testified as to his plant, which is located on a side track of the Chicago, Burlington & Quincy, and he said that the railroad had no facilities at its freight station for loading boilers and other freight for his company, which must therefore be loaded at the industry tracks. He thought it would cost 40 to 50 cents a ton to cart the freight to the freight house, but that the railroad could not handle it if he did so. His company had enjoyed trap car service ever since the plant was built about 25 years ago, and he thought the addition of 4 cents per 100 lb. to the line haul rate of 15 cents to Chicago would be unreasonable in addition to subjecting him to discrimination in favor of some of his competitors. Witnesses for plants at the other cities gave similar testimony.

On Friday, at the hearing on the Chicago situation, George Hodges, assistant general agent of the American Railway Association, took the stand to testify that the average earnings of a freight car per day are \$2.55. He was followed by Willis E. Gray, who has been engaged for some time in making a study of the Chicago terminal situation for the Chicago roads. Mr. Gray described the freight house facilities of the railroads in Chicago, saying that in addition to the main freight station there were seven universal stations and 234 substations, and he gave the history of the establishment of the universal stations. At the present time, he said, there is an average movement of 121 trap cars a day in Chicago, hauling 993 tons of freight to and from industry tracks. There are 3,087 industries in the city having trap car facilities, of which 2,090 are located on carrier lines and the others are on switching lines, while there are over 7,178 industries that have no facilities for using the trap car or the tunnel or lighterage facilities. Fifty-three per cent of the trap car business originates north of Monroe street, in a district which is well provided with freight house facilities. He presented a statistical exhibit showing the revenue from these cars, the switching and other terminal charges absorbed by the railroads, what the charge would be to the shipper at the proposed rate of 4 cents per 100 lb., and the value of such a car to the railroad based on the average earnings of a car per day for the average time consumed in trap car service, in addition to other figures. This exhibit gives figures showing that out of the gross revenue received by the railroads per car the amount paid out for switching and per diem reclaimed ranged between 4.31 per cent and 42 per cent.

PERSONNEL OF COMMISSIONS

The governor of New York has appointed Colonel William Hayward, a lawyer of New York City, a member of the State Public Service Commission, First district, in place of M. R. Maltbie, whose term has expired.

William O'Connell, county treasurer of Cook county, Illinois, has been appointed a member of the Illinois Public Utilities Commission, succeeding James E. Quan, resigned. Mr. Quan had been chairman of the commission since its organization a little over a year ago.

COURT NEWS

In the United States District Court at Detroit, Mich., March 24, the Michigan Central was found guilty of discrimination in failing to collect demurrage from the National Fireproofing Company. The court imposed a fine of \$24,000. Eighteen counts in the indictment were quashed.

Judge W. B. Sheppard of San Antonio, Tex., has decided not to grant the application of the receiver of the San Antonio, Uvalde & Gulf Railroad for authority to reduce the wages of its engineers, firemen, conductors and brakemen, but the receiver was authorized to reopen the case and take additional testimony to ascertain what would be a fair and reasonable wage for the employees in comparison with those on other roads similarly situated.

In the United States District Court at Philadelphia, March 31, indictments were returned against the Philadelphia & Reading Railway Company on the charge of violating the law in the transportation of coal by barges for the Philadelphia & Reading Coal & Iron Company and other shippers to New England points without having on file with the Interstate Commerce Commission tariffs showing the freight rates; also for failure to collect demurrage on shipments of coal to Port Richmond.

In the United States District Court at New York City March 27, Judge Charles M. Hough enjoined the Lehigh Valley Railroad from paying commissions to Sheldon & Company, freight forwarders, holding that such payments amounted to rebates, and consequently were illegal. Edward Sheldon, head of the firm in question who had been indicted for the same offence, has gone free, the indictment having been dismissed by Judge Martin. Judge Hough, referring to this action, spoke of the seriousness of branding as a convict a man doing an honest business who fails to comply with a new-fangled statute. Judges are cautious against encouraging juries to find criminal intent in offences against such statutes, where no moral turpitude is evident.

Delivery of Live Stock at Market

When the railroad delivers live stock at market on the day agreed upon, even though delivered at such hour and in such condition as to make it necessary to carry the animals over to the following day's market to get the best results, the Texas Court of Civil Appeals holds that such delivery is a compliance with its contract, and it is not liable for any resulting damage.—Texas Midland v. Fogleman (Tex.), 172 S. W., 558.

Railroad Relief Association—Invalid Contract

The Indiana Supreme Court, following the ruling in Philadelphia, etc., R. Co. v. Schubert (1912), 224 U. S., 603, 32 Sup. Ct., 589, holds that a provision of the contract between a railroad relief association and an employee of the company which deprived the employee of any benefits unless any suit by the employee for negligent injury should be discontinued, being forbidden by the federal employers' liability act, invalidated the entire contract, and left the employee without any claim on the association.—Baltimore & O. v. Miller (Ind.), 107 N. E., 545.

Injury to Shopman at Work (Not an Employee)

A railroad company maintained a track extending from its main tracks half way into the shed of a company which made and repaired cars. The track was used for delivering material and taking away cars made or repaired. Several of the manufacturing company's employees were at work on car bodies in the shed, in such a position that they could not care for their

own safety. While the railroad company's servants were making an attempt to couple cars on the delivery track, the rear car was pushed off the end of the track, crushing a workman. In an action for his injuries, the New Jersey Court of Errors and Appeals held that, as the railroad company's servants knew of the nearness of the cars to the end of the track and to the car bodies in the shed, the company was guilty of negligence, rendering it liable. Jacowicz v. D. L. & W. (N. J.) 92 Atl., 946.

Fellow Servants

In an action for the death of an employee engaged in repairing cars in the defendant's repair yards it appeared that the death was the result of negligence of the crew of a switch engine which brought cars to and from the yards. The switching crew did switching all over the yards where the deceased and other laborers were working. They were all in the employment of the railroad, and were engaged in the same general enterprise. The Indiana Appellate Court holds that they were fellow servants, and that under the common law rule that a master is not responsible for injuries caused by fellow servants, the railroad was not liable.—Chicago & Erie v. Mitchell, (Ind.) 107 N. E. 743.

Changing Grade—Compensation

The New York Appellate Division holds that the Court of Appeals having decided, in *re Application of Grade Crossing Commissioners*, 209 N. Y. 159, 102 U. E., 552, that a railroad company may elevate or depress its tracks without making compensation to abutting owners, such owners were not entitled, in proceedings to eliminate a grade crossing, to compensation for damages alleged to have been sustained by a change of grade of a railroad on its own right of way, although the report of the commissioners allowing such compensation was made and affirmed before the said decision of the Court of Appeals was rendered. In *re Grade Crossing Commissioners* (N. Y.) 151 N. Y., 146.

Injury to Live Stock—Proof of Cause

The Kentucky Court of Appeals holds that where live stock is accompanied by the owner or his agent, the burden is on him to show how any injury occurred; but where not accompanied, then, on the owner showing injury, the fact of injury is taken as *prima facie* evidence of negligence in transportation; and the burden is on the carrier to show that the injury was due to the inherent propensities or viciousness of the animals. After several cows and calves, not accompanied by owner or agent were loaded, the car was delayed for some time. A commotion broke out among the animals, and on investigation it was found that one of the cows was fighting the others, and ten of them were dead, without indication that they were gored to death. It was held, in an action for their loss, that the question of the cause of loss was for the jury, and judgment for the plaintiff was affirmed.—C. N. O. & T. P. v. Veatch (Ky.), 172 S. W., 89.

State Regulation of Intrastate Carriers—Facilities to Express Companies

The Texas Court of Civil Appeals holds that the absolute power of the federal government to regulate interstate commerce is not interfered with by a Texas law requiring a railroad to grant to an express company the same facilities and accommodations on the same terms and conditions as are afforded another express company. The state has power to fix intrastate rates, applicable through its territory; and both the railroad and the express company are subject to such regulations and rates as may be provided by state law for intrastate commerce. If it be said that the question of interference with interstate commerce by the establishment of statewide rates for intrastate traffic has seldom been raised, this fact itself attests the common conception of state authority, and the decisions recognizing and defining the state power wholly refute the contention that the making of such rates either constitutes a direct burden upon the interstate commerce or is repugnant to the federal statute. Trinity & B. V. v. Empire Express Company (Tex.) 173 S. W., 217.

In another case, where a railroad company was held bound, under the Texas statute, to grant an express company equal facilities with another express company, the same court held

that it devolved upon the plaintiff to show a willingness to obligate itself to perform the same services for the railroad company, as the other express company performed under its contract, since such services were valuable to the railroad company and necessarily entered into the reasonableness of the rate charged the other express company. *Missouri, K. & T. v. Empire Express Company* (Tex.) 173 S. W., 222.

Cessation of Interstate Commerce—Drifting Cars—Employer's Liability

Empty cars were delivered in the state of New York to the railroad owning them, and were then, according to railroad terminology, "at home." They were moved, without being billed or destined for any particular place, to points in Pennsylvania, where such cars were usually assembled for distribution and use, and, not being needed at these points, were from time to time moved to other distributing points in Pennsylvania. While they were still "drifting," an injury occurred to a brakeman on a train on which they were being moved. It is held by the Circuit Court of Appeals that the interstate movement of these cars ceased when they reached the first distributing point in Pennsylvania, and thereafter their movement did not constitute "interstate commerce," within the federal Employers' Liability Act. *Pennsylvania v. Knox*, C. C. A., 218 Fed. 748.

Injuries from Animal Escaped from Railroad Wreck—Proximate Cause

A collision between freight trains, caused by the negligence of the railroad's employees, resulted in the wreck of a number of cars loaded with cattle, from which a number of wild, dangerous Texas cattle escaped into the city of Harper, Kan. About four hours after the collision, while the cattle were being gathered together and driven to the stockyards by persons employed by the railroad for that purpose, one of the animals, a cow, charged and injured a woman who was walking on the sidewalk. This cow, after the wreck, and before attacking the woman, had made three separate attacks on one of the men driving her. In an action against the railroad the Kansas Supreme Court held, by a divided court, that the railroad was liable for the injury done to the plaintiff, of which the collision was the proximate cause. Three justices dissented, on the ground that the injury was not the natural or probable consequence of the collision, which, therefore, was not the proximate cause of the injury. *Hartman v. Atchison, T. & S. F. (Kan.)*, 146 Pac. 335.

Transition from Intrastate to Interstate Commerce—Point of Time

A railroad company was owned by a mill company, and its road was used as a logging road from its timber lands in the state of Washington to Puget Sound, where the logs were placed in the water. A portion of the logs were thereafter sold to other mills and the remainder made by the mill company into lumber, which was afterwards sold, some for use locally, and some for shipment to other states or countries. Poles for electric wires were sold to a dealer, to whom they were delivered in the water, and he rafted and removed them, afterwards reselling them to go to other states. In an action for personal injuries brought by a brakeman under the federal Employers' Liability Act, the Circuit Court of Appeals held that the logs, poles, or lumber did not become subjects of interstate commerce until committed to a carrier for transportation to another state, or started on their ultimate passage to that state, and that the railroad company was not engaged in interstate or foreign commerce within the meaning of the act. The court quoted the United States Supreme Court's definition of what is and what is not interstate commerce in *Coe v. Errol*, 116 U. S. 517, 6 Sup. Ct. 475. *Norgard v. Marysville & N. C. C. A.*, 218 Fed. 737.

Duty Toward Invitees on Railroad Premises

A public weigher had placed upon a railroad platform a shipment of cotton, which by mistake contained two bales not intended to be shipped. He afterwards went to the platform to get the two bales, and, not finding them there, attempted to enter the car into which some of the cotton had been loaded, using the truck iron leading from the platform to the car. The truck iron fell under his weight and he sustained injuries for which he sued the railroad. It was held by the Texas Court of

Civil Appeals that the plaintiff was an invitee of the railroad company, and not a mere licensee, since his purpose in entering the car was incidental to and connected with the railroad's business, though not of direct pecuniary benefit to the railroad; and the railroad owed him as such invitee the duty to exercise ordinary care to keep its premises reasonably safe. *M. K. & T. v. Kinslow* (Tex.) 172 S. W. 1124.

Derailment—Presumptions as to Cause—Defective Complaint

Three freight cars, part of a mixed train, left the track while moving at a speed of about 15 miles an hour, resulting in a severe shake-up of a passenger coach, and, as alleged in an action against the railroad, in personal injury to the plaintiff. The plaintiff based his right to recover mainly on the *prima facie* presumption of the company's negligence which was raised by law, in view of the unexplained derailment of the cars. A derailment, the Alabama Supreme Court said, in such cases may conceivably be due to defective car wheels, a defective roadway, including rails and ties, a foreign obstruction, or an excessive rate of speed. The evidence rebutted any presumption of defective cars, foreign obstruction or excessive speed; and there was nothing in the slightest degree to show wilful or wanton misconduct on the part of the company or its servants, proof of which must be affirmative, and cannot be supplied by the presumption of the law referred to. The evidence did not rebut the presumption that the derailment was due to a defective condition of the rails, ties, or roadbed; but the court held that the specification of negligence in the plaintiff's complaint, which was the negligent operation of the defendant's train, was not broad enough to cover any negligence of the defendant with respect to the condition of the roadbed. Judgment for the defendant was affirmed. *Knight v. Tombigbee Valley (Ala.)* 67 So. 238.

Liabilities as to Trespassers on Tracks

It is a well-established rule that the mere use of a railroad track by the public does not convert the users from trespassers into licensees, unless its use is at a place where the public have a right to go and be, as at a public crossing, or the like; or unless it is in a city, town or populous community, where large numbers of people use the track, thereby putting upon the company the duty of anticipating their presence, and the use of ordinary care to avoid injury to them. In an action for the death of a person struck by a train while crossing a railroad trestle, it appeared that the engineer and fireman did not discover his position of peril, and did not know that the train had struck him until told so later in the day. The public were warned not to use the trestle, but it was frequently made use of by persons in the vicinity. The Kentucky Court of Appeals holds that the deceased was a trespasser, for whose death no recovery could be had.—*Card's Admx. v. Cincinnati, N. O. & T. P. (Ky.)* 173 Pac. 335.

Applicability of Federal Employers' Liability Act

In an action for personal injuries under the federal employers' liability act it appeared that the plaintiff was at the time of the accident front brakeman of a freight train engaged in interstate commerce. In response to a call to join the train, which was standing upon a "ready track," he asked the fireman if he was ready to start. The latter replied that he was not quite ready, that the tool boy had left him no tin cup, and he asked the plaintiff to hunt the tool boy up and get one. He started to do so. The night was foggy. To avoid an engine he took a few steps backwards and fell into a cinder pit. For the resulting injuries he brought suit, alleging negligence in the omission to supply the tin cup; in the construction and maintenance of the cinder pit; and in its dangerous condition. The defenses were, denial of the alleged negligence, assumption of risk, and that the plaintiff was doing an act not materially or directly connected with interstate commerce.

The Court of Appeals of Maryland held that the act of the plaintiff in looking for the tool boy was such a participation in interstate commerce as to bring him within the act. It was held that the doctrine of assumption of risk did not apply, that the plaintiff was not guilty of contributory negligence, and that the railroad company was liable, on the ground, apparently, of negligence in the construction and maintenance of the pit. *Baltimore & O. v. Whitacre*, (Md.) 92 Atl. 1060.

Switching Privilege or Use of Terminals?

The Supreme Court of the United States in the decision reported in this column February 26 forbidding the Pennsylvania to refuse to switch cars for the Buffalo, Rochester & Pittsburgh, sustained an order of the Interstate Commerce Commission holding that the B. R. & P. in demanding that its cars should be switched to industries at reasonable rates was not demanding the "use of terminals," in the meaning of Section 3 of the Interstate Commerce Law. The facts, in brief, are given below:

The Interstate Commerce Commission, on the petition of the Buffalo, Rochester & Pittsburgh, ordered the Pennsylvania to accept from the B. R. & P. carloads of freight within the switching limits of Newcastle, Pa., as it did from the Pittsburgh & Lake Erie and other roads. Commissioner Harlan, dissenting, was disposed to agree to an order fixing reasonable joint through rates for the use of the Pennsylvania's terminals, but disagreed with the order on the grounds made. The Pennsylvania went to the federal court for an injunction against the enforcement of the order. The motion was denied, two judges concurring and one judge dissenting, and the Pennsylvania appealed to the United States Supreme Court, which, in an opinion by Mr. Justice Day, says:

Section 3 of the Interstate Commerce Act forbids any undue or unreasonable preference, etc. What is such undue preference, etc., is a question, not of law, but of fact. If the order made by the Commission did not contravene any constitutional limitation and was within the constitutional and statutory authority of that body, and not unsupported by testimony, it could not be set aside by the courts, as it was only the exercise of an authority which the law vests in the Commission. The sole question was whether the Commission exceeded its authority in requiring the Pennsylvania to desist from what the Commission found to be a discriminatory practice.

When the Pennsylvania used its terminal facilities in connection with the receipt and delivery of interstate carload freight it was subject to the provisions of the act, and was obliged to afford all reasonable, proper and equal facilities for the interchange of traffic with connecting lines at non-discriminating rates.

The cars transported over the B. R. & P. are brought to the Pennsylvania at a point where it receives from other roads. The Pennsylvania insisted that the statutory provisions did not apply to it under the circumstances of this case, and that the Commission exceeded its authority for three reasons: (a) That there was no discrimination in a real sense, and certainly none warranting the making of the order; (b) that the order required the company to give up the use of its terminals to another company in violation of the last clause of section 3, and (c) that the order was a taking of property without due process of law, since it subjected the Pennsylvania's property to the use of the B. R. & P. without compensation. With the other three roads the Pennsylvania had certain reciprocal arrangements, covering many junctions. It was contended that this, more than the \$3 per car which it charged these companies, was the real inducement for its favorable treatment of them. But the court said that the amount of traffic between these three roads being of a varying and differing quality, to ascertain the value of such service to the Pennsylvania would be a futile undertaking. For instance, it was shown that during 1911 the B. & O. switched for the Pennsylvania 69 cars at New Castle, and in the valleys generally 8,900 cars. The B. R. & P. switched for the Pennsylvania in the same year 406 cars in New Castle and 3,661 cars to points adjacent thereto. The Pennsylvania moved nearly twice as many cars for the B. & O. as the B. & O. did for it. The court therefore sustained the government's contention that such reciprocal switching arrangements ought not to justify giving the B. & O. a preference.

It was also held that there was no requirement in the order of the Commission amounting to a compulsory taking of the use of the terminals of the Pennsylvania by another road, within the inhibition of the last clause of section 3. The order gave the B. R. & P. road no right to run its cars over the terminals of the Pennsylvania or to use or occupy its stations.

Chief Justice White dissented, saying: "I have found it impossible to escape the conclusion that instead of being a question concerning a mere switching privilege, it is really one involving the using of terminal facilities."

Railway Officers

Executive, Financial, Legal and Accounting

George J. Gould, president of the Texas & Pacific, with headquarters at New York, has been elected also chairman of the board of directors.

W. R. Sullivan and H. R. Warfield of New York, and J. M. Wilkinson of Valdosta, Ga., have been appointed receivers of the Georgia & Florida.

J. C. Nelms has been appointed auditor of the Norfolk Southern, with headquarters at Norfolk, Va., succeeding L. A. Farquhar, effective April 10.

Charles F. Black has been appointed attorney of the Central Vermont, with office at St. Albans, Vt., vice C. W. Witters, deceased. Effective April 15, 1915.

E. K. Crowell has been appointed auditor of the Kansas City & Memphis, with headquarters at Rogers, Ark., in place of W. W. Moody, who has resigned to accept service with another company.

Stephen Little, having voluntarily retired from the office of secretary of the Denver & Rio Grande, John P. Howland, assistant secretary, has been elected as his successor, with headquarters at New York.

Alexander Robertson, assistant to the president of the Missouri Pacific, the St. Louis, Iron Mountain & Southern, the Denver & Rio Grande and the Western Pacific, will until further notice, it is announced by President Bush, assume all duties heretofore performed by E. J. Pearson, vice-president in charge of operation of the Missouri Pacific. The position is an elective office and requires a vote of the board of directors of that company to make any selection permanent.

Mr. Robertson was born at Albany, N. Y., in 1860, and began railway work in 1885 with the Fitchburg Railroad, with which company he remained until April, 1897, being employed consecutively as brakeman, conductor, general yardmaster, station master and trainmaster. In November of that year he went to the Wabash and until August, 1903, was successively general yardmaster, trainmaster and superintendent of the Middle division. He then became manager of operation of the Western Maryland and West Virginia Central & Pittsburgh, resigning in January, 1904, to accept the position of general manager of the Terminal Railroad Association of St. Louis. Mr. Robertson returned to the Western Maryland and West Virginia Central & Pittsburgh in November, 1905, as general manager; in April, 1907, he was made vice-president of the former road, which absorbed the West Virginia Central & Pittsburgh and was elected president in May, 1911, resigning January 1, 1913. He was appointed assistant to the president of the Missouri Pacific-Iron Mountain system on June 9, 1913, his jurisdiction being extended over the Denver & Rio Grande and the Western Pacific the following month. He now becomes vice-president in charge of operation of the Missouri Pacific-Iron Mountain system, with headquarters at St. Louis, Mo., as above noted.



Alexander Robertson

Edward J. Pearson, whose election as first vice-president of the Texas & Pacific, with headquarters at New Orleans, La., has already been announced in these columns, was born at Rockville, Ind., in October, 1863. He was graduated from the engineering department of Cornell University and began railway work in 1880 as a rodman on the Missouri Pacific. Subsequently he was in the engineering department of the Missouri, Kansas & Texas and the Atlantic & Pacific until 1883, when he went to the Northern Pacific as assistant engineer. From 1885 to April, 1890, he was supervisor of bridges, buildings and water supply of the Minnesota and St. Paul divisions; the succeeding two years he was engineer of the Eastern division and from May, 1892, to May,

1894, he was principal assistant engineer at Chicago in charge of the construction of Chicago terminal lines and of work on the Wisconsin Central Lines being operated by the Northern Pacific. He was then made superintendent of the Yellowstone division; in August, 1895, was transferred to the Rocky Mountain division as superintendent, and from December, 1898, to April, 1902, was superintendent of the Pacific division. On the latter date Mr. Pearson was promoted to assistant general superintendent and in September of the following year was made acting chief engineer, being appointed chief engineer in May, 1904, which position he held until December, 1905, when he left the Northern Pacific to become chief engineer of the Chicago, Milwaukee & Puget Sound. He resigned June 1, 1911, to go to the Missouri Pacific and the St. Louis, Iron Mountain & Southern as first vice-president, and he now has been elected first vice-president of the Texas & Pacific, in which position he will be in charge of operation and will direct the construction of large terminals at New Orleans.

Operating

James Shannon, trainmaster of the Northern Pacific at North Yakima, Wash., has been transferred to Spokane in a similar capacity.

Asa C. Bowen, trainmaster of the Chicago, Milwaukee & St. Paul at Lewistown, Mont., has been transferred to Tacoma, Wash., as trainmaster of the Coast division.

Harry Gee, foreign traffic manager of the American Express Company at New York, has been appointed general manager of the foreign department, with headquarters at New York, succeeding M. F. Berry, deceased.

E. D. Hogan, superintendent of transportation of the New Orleans, Mobile & Chicago, at Laurel, Miss., has been appointed general superintendent, with headquarters at Laurel, and his former position has been abolished.

T. J. Wyche, chief engineer of the Western Pacific, has been appointed assistant general manager, with headquarters at San Francisco, Cal., and C. E. Benton has been appointed superintendent of dining cars, with headquarters at Oakland, Cal.

A. P. Apperson, general superintendent of the Utah lines of the Denver & Rio Grande, at Salt Lake City, Utah, has been appointed also general superintendent of the Salt Lake City Union Depot Company, vice William Otteson, superintendent, deceased.

W. F. Schaff, superintendent of the Detroit division of the New York Central, at Detroit, Mich., has been appointed superintendent of the Toledo division, with office at Cleveland, Ohio, succeeding E. B. Cook, deceased. E. R. Bissell, assistant superintendent at Toledo, is appointed superintendent at Detroit, succeeding Mr. Schaff. E. D. Moon, assistant division superin-

tendent at Ashtabula, Ohio, is appointed assistant superintendent at Toledo, Ohio, succeeding Mr. Bissell, and J. R. Todd, trainmaster at Ashtabula succeeds Mr. Moon as assistant superintendent at Ashtabula.

William Marshall, superintendent of telegraph of the Canadian Pacific at Toronto, Ont., has been appointed assistant manager of telegraph, with headquarters at Winnipeg, Man., and H. J. Lille has been appointed superintendent of telegraph, with headquarters at Toronto, Ont., succeeding Mr. Marshall.

James Warren Roberts whose appointment as general superintendent of passenger transportation of the Pennsylvania Lines West, with headquarters at Pittsburgh, Pa., has already been announced in these columns, was born on February 10, 1872, at Buckhannon, W. Va. He was educated in the public and high schools of Indiana, and later took a business course in the Lafayette Business College, Lafayette, Ind., and a scientific law course in the Indiana College, Covington, Ind. In March, 1894, he began railway work with the Lake Erie & Western, remaining with that company until February, 1900, when he entered the service of the Cleveland, Cincinnati, Chicago & St. Louis, and from July, 1903, to January of the following year was in the service of the Missouri, Kansas & Texas, serving consecutively as telegraph operator, station agent, yard clerk, assistant yardmaster, yardmaster, car distributor, train dispatcher, chief clerk in division superintendent's office, chief clerk in assistant general superintendent's office, with supervision over freight and passenger car distribution matters, and as chief clerk in the general superintendent's office. He entered the service of the Vandalia on January 4, 1904, as a clerk in the transportation department. The following January he was appointed assistant chief clerk in the office of the general manager, and in January, 1910, was appointed assistant car accountant. He was promoted to car accountant in September, 1910, and in October of the following year was appointed superintendent of car service of the same road, which position he held at the time of his recent appointment as general superintendent of passenger transportation of the Pennsylvania Lines West, as above noted.

Traffic

H. C. Hallmark has been appointed assistant general freight agent of the Southern Pacific at Tucson, Ariz.

Charles Hamilton, traveling passenger agent of the Wabash, at Pittsburgh, Pa., has been appointed district passenger agent, with office at Philadelphia.

F. T. Brooks, district freight and passenger agent of the Southern Pacific at Buffalo, N. Y., has been appointed district freight and passenger agent, with office at Philadelphia, Pa., vice R. J. Smith, assigned to other duties, and S. C. Chiles succeeds Mr. Brooks.

Gerrit Fort, passenger traffic manager of the Union Pacific and the Oregon Short Line, with office at Omaha, Neb., has been appointed also passenger traffic manager of the Oregon-Washington Railroad & Navigation Company, and effective on April 1, will have jurisdiction over the entire Union Pacific system. His headquarters have been moved to Chicago, although the general offices of the department will remain at Omaha.

It is announced that effective on April 1 the Denver & Rio Grande and the Western Pacific will be operated separately. E. L. Lomax, assistant passenger traffic manager of both roads, has been appointed passenger traffic manager of the Western Pacific, with headquarters at San Francisco, Cal. C. R. Miller, assistant general baggage agent of the Western Pacific, has been appointed general baggage agent, with office at San Francisco.

Engineering and Rolling Stock

A. H. Powell, master mechanic of the Western Pacific at Sacramento, Cal., has been appointed general master mechanic, with headquarters at that place.

OBITUARY

C. H. Trimble, commercial agent of the Atlantic Coast Line at St. Louis, Mo., died recently in that city.

Sidney Freshman, general manager, secretary and treasurer of the Sierra Railway of California, died on March 16, at San Francisco, aged 60 years.



E. J. Pearson

Equipment and Supplies

LOCOMOTIVE BUILDING

THE DALLAS TERMINAL is inquiring for 3 switching locomotives.

THE MONTOUR RAILROAD is in the market for 5 Mikado type locomotives.

THE SUMPTER VALLEY has ordered 2 Mikado type locomotives from the Baldwin Locomotive Works.

THE MISSOURI PACIFIC is reported to be considering the purchase of a number of Decapod type locomotives. This item has not been confirmed.

THE TOLEDO, ST. LOUIS & WESTERN.—Walter L. Ross, receiver, has asked permission of the Federal court at Toledo to borrow \$600,000, part of which is to be used for the purchase of 5 new locomotives, 50 furniture cars and 2,000 tons of steel rails.

THE LEHIGH & NEW ENGLAND has ordered two superheater eight-wheel switching locomotives from the Baldwin Locomotive Works, for delivery in about 60 days. These locomotives will have 22 by 28 in. cylinders and a weight on drivers of 201,300 lb. They will be provided with Westinghouse air brakes, Symington steel tender journal boxes, Westinghouse friction draft gear with Farlow attachments, Dressel oil-burning headlights, Sharon couplers, Watters air sanders, Standard solid forged rolled steel wheels, Midvale tires, Railway Materials Company brake shoes, Sellers' injectors, Walschaert valve gear and Elliott flange oilers.

CAR BUILDING

THE ALIQUIPPA & SOUTHERN is asking for prices on 20 freight cars.

THE TOLEDO, ST. LOUIS & WESTERN.—See item under Locomotive Building.

THE CHICAGO & EASTERN ILLINOIS is in the market for two 60-ft. steel postal cars.

THE HELENA, PARKIN & NORTHERN, Parkin, Ark., is in the market for a few second hand dump cars.

THE MINNEAPOLIS & ST. LOUIS has revived an inquiry for freight cars, and is now in the market for 900 box cars and 100 coal cars.

THE CHICAGO GREAT WESTERN has ordered 2 buffet library and chair cars, 2 observation parlor cars and 2 baggage and smoking cars from the Pullman Company.

THE CENTRAL OF NEW JERSEY has ordered 15 coaches, 10 combination passenger and baggage cars and 5 combination baggage and mail cars from the Harlan & Hollingsworth Corporation.

RUSSIAN GOVERNMENT.—The Petrograd correspondent of the Daily Telegraph of London has reported that an order for rolling stock amounting to about \$7,000,000 has gone to this country and that a British syndicate lost the order because its bids were higher than those of the American firms.

IRON AND STEEL

THE TOLEDO, ST. LOUIS & WESTERN.—See item under Locomotive Building.

THE WABASH has ordered 683 tons of steel for repairs to its bridge at St. Charles, Mo., from the Decatur Bridge Company.

THE CHICAGO & EASTERN ILLINOIS has ordered 10,000 tons of 90-lb. open hearth steel rails from the Illinois Steel Company.

THE GREAT NORTHERN has ordered 350 tons of steel in the form of girder spans from the Milwaukee Bridge Company, Milwaukee, Wis.

Supply Trade News

The Stentor Electric Manufacturing Company, Inc., has moved its office from 1790 Broadway, New York, to 126 Fifth avenue.

The Federal Signal Company, Albany, N. Y., has moved its New York office to the Vanderbilt Concourse building, 52 Vanderbilt avenue.

The American Locomotive Company has received a large contract for shrapnel, and has purchased \$500,000 worth of machine tools to enable it to fill the order.

The Burd High Compression Ring Company has moved its general and executive offices at Rockford, Ill., from the Masonic Temple to 307-309 South Main street.

The American Car & Foundry Company will participate in the order for shrapnel recently placed with the Canadian Car & Foundry Company by the Russian government.

The Wyckoff Pipe & Creosoting Company, Inc., has moved its offices from 50 Church street, New York, to the Forty-second Street building, at 30 East Forty-second street.

The National Carbon Company, Cleveland, Ohio, is marketing a new signal cell, type 72. It is made in accordance with the R. S. A. specifications for signal cells, and has been in severe operating service for two years at various places.

William T. Simpson, vice-president of the American Rolling Mill Company, Middletown, Ohio, died in Cincinnati on March 30. Mr. Simpson was born in Saratoga county, New York, 59 years ago. He was one of the leading men in the steel industry of the middle west.

The Bird-Archer Company, New York, has opened a St. Louis office at 513 Frisco building, and a Chicago office at 866 Peoples Gas building. The St. Louis office is in charge of J. A. McFarland, vice-president, and the Chicago office is in charge of L. F. Wilson, vice-president.

Frederick Dietz, head of the firm of R. E. Dietz & Co., New York, one of the largest manufacturers of lanterns in the world, died at his home in New York on March 31, in his 68th year. Mr. Dietz was born in that city and was a son of the late R. E. Dietz, founder of the lantern firm, of which he had been a member all his life.

Osborn Van Brunt, for 10 years traffic manager of the Simons Hardware Company, St. Louis, and formerly chief contracting freight agent of the Chicago, Burlington & Quincy, has been appointed manager of traffic and railway sales of the General Roofing Company, St. Louis, effective April 1. Mr. Van Brunt will supervise the traffic work of the entire company, this work having previously been handled by the traffic manager of each mill. He will also organize a railway sales organization to enable the company to cultivate more extensively the sale of the company's products to the railroads.

TRADE PUBLICATIONS

ELECTRIC DRILLS.—Bulletin E-35 of the Chicago Pneumatic Tool Co., has recently been issued. It is devoted to electric portable drills which are designed for operation on direct or alternating current.

RAIL JOINT EXPANDER.—The Chicago Railway Signal & Supply Company, Chicago, recently issued a four-page folder which describes and illustrates the uses of the Chicago rail joint expander. It also contains a price list of this device.

PREVENTION OF BELT SLIPPING.—The Gripwell Pulley Covering Co., 601 Candler Bldg., New York, has just issued a folder devoted to its product "Gripwell" which is a cement and canvas covering for pulley surfaces designed to increase the adhesion of the belt.

GLACIER NATIONAL PARK.—The passenger department of the Great Northern recently issued a circular, which contains detailed

information regarding the points of interest in the park and how they may be reached. It also gives complete time schedules and prices covering the various trips.

PIPE BENDER.—Bulletin No. 5,001 of the Hydraulic Press Manufacturing Co., Mount Gilead, Ohio, is a folder entitled Bending Pipe with Hydraulic Power. It deals with a recently developed hand-operated pipe bender manufactured by this company and having a pressure capacity of 30 tons.

COALING PLANTS.—The Roberts & Schaefer Company of Chicago, Ill., recently issued an eight-page folder containing general data on locomotive coaling plants. Numerous illustrations showing the various types of construction are shown. It also describes briefly a few gravity sand plants.

HYDRAULIC PRESSES AND PUMPS.—The Hydraulic Press Manufacturing Company, Mount Gilead, Ohio, has issued a booklet in which a few of the various hydraulic appliances manufactured by this company are briefly described and illustrated. The development of the business of this company as well as its present organization is briefly set forth and the plant briefly described. The booklet is intended for distribution to visitors of the exhibit of this company at the Panama-Pacific International Exposition and contains a list of catalogs dealing in detail with various classes of hydraulic equipment, which are now ready for distribution.

PUMPS.—The National Transit Company, Department of Machinery, Oil City, Pa., has just issued bulletins Nos. 1, 2, 4, 101 and 301, all of which are contained in a neat binder and are devoted to its line of pumping machinery for general service recently added to the line of oil and gas pumping machinery which it has long manufactured. In bulletin No. 1 are illustrated the pumps for different classes of service manufactured by this company, including the duplex, crank and fly-wheel direct steam driven and geared pumps; a line of gas engines and a line of pipe fittings. The other bulletins are each devoted to a particular class of service.

BELT CONVEYORS.—The Stephens-Adamson Manufacturing Company, Aurora, Ill., recently issued section 3 of its general catalog No. 19. This catalog contains 126 pages, which are chiefly devoted to reproductions of drawings and photographs illustrating the principle, design, uses and installations of the various types of belt conveyors, gates, chutes and feeders. Numerous illustrations show typical views of conveyors installed for construction work, handling cement, sand, rock, etc., also for handling coal and ore. It also includes some descriptive matter and some curves plotted to give width of belts necessary to handle certain maximum tonnages per hour.

PAINTS.—The St. Louis Surfacer & Paint Company, St. Louis, Mo., has issued a number of circulars and color cards, each one devoted to paints and varnishes for a particular class of work, all of which are neatly bound in a loose leaf folder. Among the circulars are found the following dealing with paints for railway work: No. 1-A, steel and wood freight car paint; No. 2-A, coach and car surfacer; No. 3-A, locomotive surfacer; No. 5-A, canvas roof paint, floor paint and truck enamel; No. 6-A, hand rail and headlining enamel, rattan seat finish and interior car colors; No. 7-A, coach colors and color varnishes; No. 8-A, station and building paint; No. 9-A, bridge and signal target paint, and No. 14-A, car cleaner and metal polish. A color card is included with each circular.

CENTRIFUGAL PUMPS.—The DeLaval Steam Turbine Company of Trenton, N. J., recently issued catalogue B, an attractive 298-page book, devoted to the design, manufacture, testing, erection and adaptation to the various uses, and characteristics of the DeLaval centrifugal pump. This book is divided into 13 parts, each dealing expressly with one phase of the problem, the first part being devoted to the work for which this pump is adapted, giving illustrations of installations, and curves representing its characteristics. The second and third parts deal with the selection of pumps, the fourth with tests of pumping equipment, giving general test data and formulae, etc., and so each chapter discusses fully one particular topic; reproductions of photographs and curves show results of experiments. A few chapters treat especially on speed-reducing gears and turbine-driven waterworks pumps.

Railway Construction

ALABAMA ROADS.—The Henderson-Waits Lumber Company, Tuscaloosa, Ala., has recently secured control of about 23,500 acres of timber land in Tuscaloosa county, Ala., and it is understood will build a railroad about 15 miles long into these lands.

ATCHISON, TOPEKA & SANTA FE.—A contract has been given to the L. J. Smith Contracting Company, Kansas City, to grade seven miles out of Exeter, Cal.

CANADIAN ROADS.—Plans are being made to build a railway from Pennfield, N. B., on the Canadian Pacific southwest to Beaver harbor, L'Etang and Blacks Harbor, about eight miles. The promoters have asked the government of New Brunswick to guarantee bonds at the rate of \$20,000 a mile. L. Connors, Blacks Harbor, and H. I. Taylor, are interested.

CHOWCHILLA PACIFIC.—The grading work on the two-mile extension of this company's line in Madera county, California, has been completed and the track is being laid. Gasoline motive power will be used. Chadwick & Sykes, San Francisco, Cal., are the contractors.

HILLSBORO & NORTHEASTERN.—This company has applied to the Wisconsin Railroad Commission for authority to extend its line from Hillsboro, Wis., via Yuba and Rockbridge, to Richland Center, a distance of 28 miles. The building of this line will require the construction of 12 bridges with spans about 100 ft. long and several small ones.

KENTUCKY ROADS.—Right of way has been secured in Clay county, it is said, for building a line from Manchester, Ky., south to Barbourville, in Knox county, about 25 miles. W. D. Boyer and E. W. Gerheart, represent a contractor who agrees to build the line. Pennsylvania capitalists are back of the project. C. B. Lytle and C. B. Donnelly, Manchester, are interested in the project.

NEW BRITAIN, KENSINGTON & MERIDEN (Electric).—This company has asked for an extension of time in which to complete a line from Meriden, Conn., north via Kensington to New Britain, about ten miles. E. A. Moore, president, New Britain.

NEW YORK SUBWAYS.—The New York Public Service Commission, First district, will receive bids up to April 9, for the construction of section No. 4 of Routes Nos. 4 and 36, which is that part of the Broadway-Seventh avenue subway in the borough of Manhattan, between Fifty-first and Fifty-ninth streets. It is expected that bids for the section between Thiry-eighth and Fifty-first streets will be asked for within the next few weeks. The entire line will be under contract when these two sections are let.

OTTAWA & ST. LAWRENCE ELECTRIC.—This company, which was organized in 1912, to build about 300 miles of electric railway in eastern Ontario out of Ottawa, will resume construction work early this spring, it is said. About 28 miles have been graded and are ready for ties and rails, and the company expects to build about 56 miles this year. H. W. Pearson, Confederation Life building, Toronto, is secretary. (February 5, p. 25L.)

PALM BEACH & EVERGLADES.—A sub-contract is reported let to Sanders & Company, Miami, Fla., to build a canal and grade this line from West Palm Beach southwest. The plans call for building from West Palm Beach, west to Lake Hicpochee. The Everglades Construction Company, it is said, has the general contract. Charles H. Baker, president, New York. (March 12, p. 494.)

PETERSBURG & APPOMATTOX (Electric).—This company with \$100,000 capital was recently given a charter in Virginia to build an electric line from Petersburg, Va., southeast to City Point, 10 or 12 miles. A preliminary survey has been made and the engineers have nearly completed a second survey. As soon as the engineering work has progressed far enough and the right of way has been determined upon and secured, the company expects to begin construction work and to push the

work to completion. T. M. Wortham, president; D. W. La Prade, vice-president; W. W. La Prade, secretary and treasurer in charge of engineering, Richmond, Va. Edwin Wortham, an electrical engineer, is also associated with the company and will later take charge of the engineering department. (March 12, p. 494.)

SAVANNAH PIEDMONT & WESTERN.—Incorporated in South Carolina to build a railroad from a point on the Savannah river at or near North Augusta in Schultz township, Aiken county, north to a point in Saluda county, thence northwest to Greenwood in the county of the same name, about 60 miles. The company has not yet decided whether it will use steam or electricity as the motor power. J. Peyton Clark, New York; S. H. McGhee and K. Baker, Greenwood, S. C., are among the incorporators.

TENNESSEE ROADS.—The Kingsport Lumber Company, Kingsport, Tenn., is building a railroad, it is said, into timber lands adjoining their mills.

TIDEWATER SECURITIES CORPORATION.—A contract has been given to J. N. Gillis & Son, Brewton, Ala., to build a railway from the terminus of the Mobile & Ohio tracks near Alabama Port, Ala., to Cedar Point, 3.66 miles. The line is later to be extended to Dauphin Island, a total of about nine miles. J. M. Dewberry, president, and T. W. Nicol, chief engineer, Mobile. (February 12, p. 289.)

TOLEDO, ST. LOUIS & WESTERN.—W. L. Ross, receiver for the Toledo, St. Louis & Western, has applied to the Federal court at Toledo for permission to borrow \$600,000 to cover additions and betterments to property, elimination of trestles, etc., also for purchases of locomotives and cars.

TORONTO & YORK RADIAL (Electric).—The Railroad Committee of the Ontario legislature has granted this company a two years' extension of time in which to start the construction of certain lines outside the city of Toronto, Ont. This extension of time is subject to the approval of the Hydro-Electric Power Commission of Ontario.

RAILWAY STRUCTURES

BALA, ONT.—Bids are wanted until April 10, by A. L. Hertzberg, division engineer, of the Canadian Pacific, Toronto, Ont., for the construction of four concrete piers and two concrete abutments for a bridge on the Muskoka subdivision to be built over Shaw's creek, at a point about seven and one-half miles south of Bala.

BLACKWELL, OKLA.—The Atchison, Topeka & Santa Fe has awarded the contract for the construction of the combination passenger and freight station at this point to Nelson & Sons, Chicago. The estimated cost is \$15,000. (See *Railway Age Gazette*, March 12, page 494.)

CARBONDALE, PA.—Bids will be received by James MacMartin, chief engineer of the Delaware & Hudson, at Albany, N. Y., for the proposed steel viaduct to be built over the Lackawanna river and the tracks of the Jefferson branch of the Erie Railroad and a proposed line of the Delaware & Hudson near Carbondale. The viaduct will be about 411 ft. long and will require 398 tons of steel. The cost of the structure will be about \$70,000. (March 26, p. 721.)

FORT WORTH, TEX.—The St. Louis Southwestern has just begun work on the construction of 1,800 ft. of standard pile trestle in the Trinity river bottom near Fort Worth, Tex. This work is a part of the general improvement of the terminal situation, and will be completed as soon as possible. The trestle is only a temporary structure and later will be filled in. All work is being done by company forces.

SCIOTOVILLE, OHIO.—A contract has been given to the McClintic-Marshall Company for the fabrication and erection of 16,000 tons of steel for a bridge over the Ohio river at Sciotoville for the Chesapeake & Ohio Northern. The bridge is to have two 775-ft. spans with 1,900 ft. approaches, and the greatest height will be 140 ft. The contract for the substructure has been let to the Dravo Company, Pittsburgh, Pa. The estimated cost of the structure is \$1,500,000.

Railway Financial News

ATCHISON, TOPEKA & SANTA FE.—This company, it is reported, has taken over the St. Louis, Rocky Mountain & Pacific, which runs from Des Moines, N. Mex., to Ute Park, N. Mex., 106 miles. Atchison, Topeka & Santa Fe 4 per cent bonds totaling \$3,000,000 have been exchanged for the authorized and outstanding bonds of the St. Louis, Rocky Mountain & Pacific.

BOSTON & MAINE.—E. D. Codman, former president of the Fitchburg Railroad, one of the leased lines of the Boston & Maine, and at present a stockholder, has announced that he is strongly opposed to the reorganization as now proposed (*Railway Age Gazette*, p. 721). Up to within a few days Mr. Codman was in favor of some arrangement by which the road could be reorganized, but he has changed his mind because of a large reduction in maintenance charges and cost of transportation. Mr. Codman, upon seeing the figures which showed the reduction, inquired about it of President Hustis, and he replied:

"There has been no curtailment in maintenance of way or equipment expenditures necessary for safe operation and for preservation of the property. Economies in operation have been practiced and all work not necessary for safety and reasonable service has been stopped. There has been a curtailment of passenger train service to an extent which might not be justified except under the critical conditions obtaining at this time."

Mr. Codman looks upon the saving, nearly \$1,600,000 in four months, or \$400,000 a month, as "magnificent." Coming as it does mostly out of operating instead of equipment or maintenance, "there is abundant promise that the gains are going to be lasting. Now is the time for the leased line stockholders to wake up and understand that their lessee is after all a solvent corporation, capable of replacing a \$2,000,000 deficit with \$1,000,000 surplus for dividends and that President Hustis is the man they have to thank for it. . . ."

The management of the road has accepted the bill drafted by the public service commissions of Maine, New Hampshire and Massachusetts as the basis for the proposed reorganization. It still remains, however, for the various state legislatures concerned to pass the necessary legislation before further steps in the reorganization plan can be carried out.

CHICAGO, ROCK ISLAND & PACIFIC.—The Amster committee has given out the names of the four men whom they say they propose to vote for as directors to succeed the directors of the Chicago, Rock Island & Pacific Railway Company, who retire on April 12. These are J. W. Burdick, president of the West Pennsylvania Steel Company; George G. Prentice, a retired manufacturer of New Haven, Conn.; George Warren Smith, of New York, and N. L. Amster. It is, of course, only the Chicago, Rock Island & Pacific Railway Company on the board of directors of which the Amster committee is seeking to place its representatives.

ERIE.—The New York Public Service Commission, Second district, has approved the issue by this road of \$1,000,000 of its general lien bonds. The issue will be used as a part of the general new scheme of Erie financing by these bonds. Part of the proceeds will go to the treasury to reimburse it for capital expenditures and part will be used as collateral on the \$10,000,000 indenture to the Bankers' Trust Company for one year 5 per cent collateral gold notes dated April 1, 1915. The indenture takes care of the securities of the Erie & Jersey and the Genesee River, the handling of which issues by this method was recently approved by the public service commission.

GEORGIA & FLORIDA.—W. R. Sullivan and H. R. Warfield, of New York, and J. M. Wilkinson, of Valdosta, Ga., have been appointed receivers of the Georgia & Florida on the joint application of the Baltimore Trust Company, which is the trustee for the \$6,500,000 5 per cent bonds which are in default in interest since May 13, and the officers of the road. The Georgia & Florida runs from Augusta, Ga., to Madison, Fla., 250 miles.

ANNUAL REPORTS

THE CLEVELAND CINCINNATI CHICAGO & ST. LOUIS RAILWAY COMPANY

To the stockholders of

THE CLEVELAND CINCINNATI CHICAGO & ST LOUIS RAILWAY COMPANY:
The Board of Directors herewith submits its report for the year ended December 31, 1914, with statements showing the results for the year and the financial condition of the company.

The mileage embraced in the operation of the road is as follows:

	Miles
Main line and branches owned.....	1,242.73
Proprietary lines	433.33
Leased lines	203.70
Operated under contract.....	337.92
Trackage rights	163.56
 Total road operated.....	 2,381.24

This is an increase over a similar table in last year's report of 367.46 miles, of which 346.88 miles is accounted for by the inclusion this year of the Peoria & Eastern Division. Included also are trackage rights over the Terminal Railroad Association of St Louis, 12.08 miles, and additional trackage over the Indianapolis Union, 9.53 miles, partially offset by a decrease of 4.73 miles heretofore treated as trackage rights of the Peoria & Eastern Railway and other slight changes in mileage at various points.

A statement showing in detail the mileage of road operated will be found on another page.

There was no change in the capital stock during the year, the amounts authorized and outstanding on December 31, 1914, being as follows:

Preferred stock authorized.....	\$10,000,000.00
Common stock authorized	50,000,000.00
 Total preferred and common stock authorized.....	
Preferred stock issued and outstanding.....	\$10,000,000.00
Common stock issued and outstanding.....	47,056,300.00

Balance common stock authorized but not issued, December 31, 1914	\$2,943,700.00
---	----------------

The funded debt unmatured outstanding December 31, 1913, was

It has been increased during the year as follows:

C C C & St L Ry general mortgage five per cent bonds, issued for retirement of prior lien bonds	\$4,161,000.00
To place upon the general books of the company its liability in connection with additional certificates issued under the New York Central Lines Equipment Trust Agreement of 1913.....	619,224.32
To place upon the general books of the company the certificates issued under the Big Four Railway Equipment Trust Agreement of 1914	3,870,000.00
Big Four trust equipment notes 1914, issued for equipment	776,314.25
	9,426,538.57
	\$101,369,606.45

It has been decreased during the year as follows:

C C C & I Ry Co first consolidated mortgage bonds retired	\$4,138,000.00
Pro rata equipment trust certificates due January 1, 1914.....	432,019.42
Pro rata equipment trust certificates due November 1, 1914.....	246,689.81
C I St L & C Ry Co general first mortgage bonds retired	74,000.00
C I St L & C Ry Co first mortgage bonds retired	6,000.00
	4,896,709.23
	\$96,472,897.22

Less:

C C C & St L Ry (St L Div) first collateral trust mortgage bonds held in sinking fund	\$676,000.00
C C C & St L Ry (S & C Div) scrip held in treasury	230.00
	676,230.00

Total funded debt outstanding December 31, 1914.....	\$95,796,667.22
--	-----------------

Out of \$24,000,000.00 of certificates authorized under New York Central Lines Trust Agreement dated January 1, 1913, there were issued to December 31, 1913, an aggregate of \$15,494,000.00 of which this company's pro rata allotment was \$1,087,551.00. During the year 1914, additional certificates were issued amounting in total to \$6,944,000.00. The cost of the equipment assigned to this company in connection with the issue of these latter certificates, viz., 25 steel passenger coaches, 10 steel combination passenger and baggage cars and 12 steel mail cars, is approximately \$688,027.02, and its pro rata amount of certificates, representing an amount not to exceed 90 per cent of the cost is \$619,224.32.

Under Big Four Railway Equipment Trust agreement of 1914 dated June 1, 1914, there were issued equipment trust certificates aggregating \$3,870,000.00 covering the purchase of 5,085 freight train cars. The aggregate

cost to the company of this equipment is approximately \$4,837,974.75, to be covered with certificates representing an amount not to exceed 80 per cent of the cost, the remaining 20 per cent of the cost to be paid by notes payable respectively eighteen, thirty and forty-two months from January 1, 1915.

During the year the sinking fund of the Cleveland Cincinnati Chicago & St Louis Railway Company's St Louis Division first collateral trust bonds has been increased by the purchase of 31 bonds, par value \$31,000.00, making a total of 676 bonds, par value \$676,000.00, in the hands of the Central Trust Company, trustee of this fund.

All of the company's roadbed destroyed or damaged during the disastrous floods of March and April, 1913, has been restored to the original grade, and the track is again in good condition. All bridges lost or damaged have been replaced with the exception of the joint bridge at Dayton, Ohio, over the Miami River, which can not be rebuilt until the plans are agreed to by the Flood Prevention Committee of the city of Dayton, Ohio, the County Commissioners and the other roads interested.

In the reconstruction of bridges deeper foundations for bridge piers have been made and greater openings provided in order to avoid if possible a repetition of the damage sustained during this flood.

All station buildings, interlocking plants, etc., which were damaged have been either replaced or repaired.

All tracks on the Peoria and Eastern Division have been restored to their original grade. The bridges have been rebuilt with the exception of those at Troy, Ohio, which have not been permanently rebuilt on account of legislation pending which will affect them.

The direct cost of this catastrophe was \$3,223,749.21. The indirect cost from loss of use of property and business interference was large—it cannot be approximated in money.

Incident to the restoration of the property there was charged to the appropriate road and equipment accounts \$622,695.60, representing the excess cost of the new facilities over those replaced, and \$448,854.33 to operating expenses.

Section 19-A of the Act to Regulate Commerce which became a law on the first day of March, 1913, provides that the Interstate Commerce Commission shall investigate and ascertain the value of all property owned and used by railroad companies: During the year the engineering department has been engaged in the preparation of right of way maps, the compilation of lists of various kinds of property such as bridges, buildings, ownership of tracks, etc., which lists have been furnished to the field force of the Interstate Commerce Commission, Division of Valuation, for their work in inventorying the property owned by this company. During the latter part of the year four field parties of the Division of Valuation were engaged in making cross section measurements of the amount of grading in the present railroad, measuring the track, and taking inventory of track material and small bridges. These parties covered about 510 miles of the road and expect to return in April, 1915, for further work. In addition, a field party of the Division of Valuation has been engaged in making an inventory of interlocking plants on the Cairo and St Louis Divisions. A force of clerks in the general office has been created for the purpose of examining old and current books, records and memoranda necessary for use in the verification of certain of the general accounts appearing on the books of the present and predecessor companies.

SUMMARY OF FINANCIAL OPERATIONS AFFECTING INCOME

	1914	1913	Increase or Decrease
	miles operated	miles operated	miles
OPERATING INCOME	2,381.24	2,365.39	15.85 miles
RAILWAY OPERATIONS			
Revenues	\$35,365,690.61	\$37,613,498.15	-\$2,247,807.54
Expenses	28,954,969.13	32,811,468.02	-3,856,498.89
NET REVENUE FROM RAILWAY OPERATIONS	\$6,410,721.48	\$4,802,030.13	\$1,608,691.35
Percentage of expenses to revenues	(81.87%)	(87.23%)	-(5.36%)
RAILWAY TAX ACCRUALS.....	\$1,528,026.70	\$1,408,769.06	\$119,257.64
UNCOLLECTIBLE RAILWAY REVENUES	8,608.66	.....	8,608.66
	\$1,536,635.36	\$1,408,769.06	\$127,866.30
RAILWAY OPERATING INCOME	\$4,874,086.12	\$3,393,261.07	\$1,480,825.05
MISCELLANEOUS OPERATIONS			
Revenues	\$16,518.48	\$19,900.15	-\$3,381.67
Expenses and taxes.....	11,874.84	14,846.65	-2,971.81
MISCELLANEOUS OPERATING INCOME	\$4,643.64	\$5,053.50	-\$409.86
TOTAL OPERATING INCOME..	\$4,878,729.76	\$3,398,314.57	\$1,480,415.19
NON-OPERATING INCOME			
Joint facility rents.....	\$400,607.05	\$365,906.70	\$34,700.35
Income from lease of road.....	98,660.59	.....	98,660.59
Miscellaneous rents	149,214.71	147,256.31	1,958.40
Miscellaneous non-operating physical property	77,407.69	72,276.05	5,131.64
Dividend income	61,997.90	57,665.15	4,332.75
Income from funded securities.	28,690.00	29,015.00	-325.00
Income from unfunded securities and accounts	85,344.05	115,416.71	-30,072.66
Miscellaneous income	31,276.20	28,660.82	2,615.38
TOTAL NON-OPERATING INCOME	\$933,198.19	\$816,196.74	\$117,001.45
GROSS INCOME	\$5,811,927.95	\$4,214,511.31	\$1,597,416.64

DEDUCTIONS FROM GROSS INCOME			
Hire of equipment—debit balance	\$1,706,711.86	\$1,399,335.25	\$307,376.61
Joint facility rents	613,538.58	555,028.53	58,510.05
Rent for leased roads	674,561.59	587,116.00	87,445.59
Miscellaneous rents	141,587.28	145,837.85	—4,250.57
Miscellaneous tax accruals	408.64	6,566.20	—6,157.56
Separately operated properties—loss	95,560.19	93,395.08	2,165.11
Interest on funded debt	4,049,176.32	3,975,071.19	74,105.13
Interest on unfunded debt	485,072.14	267,997.11	217,075.03
Miscellaneous income charges	5,729.70	33,825.15	—28,095.45
Income applied to sinking fund	13,269.00	.....	13,269.00
TOTAL DEDUCTIONS FROM GROSS INCOME	\$7,785,615.30	\$7,064,172.36	\$721,442.94

INCOME BALANCE TRANSFERRED TO DEBIT OF PROFIT AND LOSS			
DEBIT OF PROFIT AND LOSS	\$1,973,687.35	\$2,849,661.05	\$875,973.70

Amount to debit of profit and loss December 31, 1913.....	\$1,389,643.20
Add:	
Deficit for year 1914.....	\$1,973,687.35
Discount, commissions and expenses N Y C Lines equipment trust certificates 1913.....	15,354.25
Discount, commissions and expenses Big Four Ry equipment trust certificates 1914.....	46,281.54
Discount on C C C & St L Ry Co general mortgage bonds.....	124,830.00
Adjustment of sundry accounts.....	119,124.19
	2,279,277.33

BALANCE TO DEBIT OF PROFIT AND LOSS DECEMBER 31, 1914. \$3,668,920.53

The gross operating revenues for the year were \$35,365,690.61, a decrease of \$2,247,807.54 from 1913, largely due to the general depression in business. Of the decrease \$2,077,377.15 was in transportation revenue and \$170,430.39 in incidental.

Freight revenue for the year was \$23,436,210.75, a decrease of \$1,696,905.36 or 6.75 per cent. The revenue per ton mile was 5.31 mills, a decrease of .16 mills. Total revenue tonnage decreased 3,535,223 tons. The average haul per ton increased 14.2 miles. Train loading for the year was 548 tons per train mile, an increase of 64 tons, or 13.2 per cent.

Mention was made in last year's report of the application to the Interstate Commerce Commission for an increase of five per cent in freight rates. The Commission, in a decision rendered July 29, 1914, granted an increase of five per cent in freight rates on certain traffic to and from points within the limits of the Central Freight Association territory; these increased rates becoming effective October 26, 1914. In a further opinion submitted December 16, 1914, the Commission granted increases on cement, brick, tile, starch, clay and plaster, which were excepted in their former decision. Also upon traffic to and from territory East of Buffalo and Pittsburgh, excepting coal, coke and iron ore, which commodities during 1914 comprised 48.42 per cent of the total tonnage carried by the company. The increases under the order of December 16th are to become effective January 15, 1915, in the territories and on the commodities prescribed. Similar increases on the same commodities have been allowed on intra-state traffic in the State of Ohio, but no increases have been made effective on intra-state traffic in the States of Indiana and Illinois due to the suspension of the proposed increases by the public service commissions of the states in question. It is hoped, in the interest of the transportation needs in these States, that the commissions will finally grant the increases.

Passenger revenue for the year was \$8,589,012.14, a decrease of \$302,189.15, or 3.4 per cent. This amount is made up of a decrease in the revenue from local business of \$354,693.95, partially offset by an increase in interline revenue of \$52,504.80. The average distance carried was 55.7 miles, an increase of 4.4 miles. The average amount received from each passenger was \$1.087.

Interstate passenger rates on a lower basis were increased to 2½ cents per mile, effective December 1, 1914. The states of Ohio, Indiana and Illinois either have been or shortly will be petitioned to permit an increase of the statutory rate of 2 cents per mile to 2½ cents per mile on intrastate traffic.

Revenue from transportation of mail was \$772,359.42, an increase of \$24,984.80, or 3.34 per cent, due to the reinstatement effective January 26, 1914, in mail service of certain magazines which were being handled in freight train service, and additional remuneration allowed from July 1, 1914, account parcel post.

Revenue derived from express traffic was \$953,181.41, a decrease of \$154,808.01, or 13.97 per cent, attributable to smaller volume of business handled caused by the business depression and increasing use made of the parcel post facilities, also to reduction in express rates ordered by the Interstate Commerce Commission effective February 1, 1914.

Incidental revenues decreased \$170,430.39, of which \$40,998.47 is in dining car operations, due to the decrease in passenger business, \$44,178.91 in demurrage and \$83,189.58 in miscellaneous.

The gross operating expenses for the year were \$28,954,969.13, a decrease of \$3,856,498.89, while the decrease in gross operating revenues, as previously stated, was \$2,247,807.54. Divided by groups the fluctuations in expenses making up the total decrease for the year were as follows:

Maintenance of way and structures—decrease.....	\$1,002,950.41
Maintenance of equipment repairs—decrease.....	1,389,284.33
Equipment depreciation and retirements—increase.....	166,479.73
Traffic—decrease.....	78,824.32
Transportation—rail line—decrease.....	1,527,627.62
Miscellaneous operations—decrease.....	33,366.31
General—(including Government valuation)—increase.....	36,826.10
Transportation for investment—Cr.—increase.....	27,751.73
Total decrease	\$3,856,498.89

The decrease in maintenance of way and structures is comprised of decreases in charges for roadway maintenance \$289,867.11, bridges, trestles and culverts \$81,856.63, ballast \$35,449.98, track laying and surfacing \$765,234.32, telegraph and telephone lines \$34,534.16, and maintaining joint tracks, yards and other facilities \$44,494.68, partially offset by increases in ties, rails, crossing signs, shops and engine houses and removing snow, sand and ice. The way rolls of this department decreased \$672,562.31.

The increase in equipment retirements and depreciation is \$166,479.73, of which \$131,271.66 is in retirements and \$35,208.07 in depreciation, the latter due to the additional equipment acquired during the year and the

increased value of locomotives. Actual retirements of equipment were substantially less than in the preceding year, the increase being due to an extraordinary charge to this account of \$313,678.30, incident to the repair and conversion to Mikado type of 62 consolidation locomotives.

Equipment repairs decreased \$1,389,284.33 account decrease in shop machinery \$32,192.38, steam locomotives \$97,283.86, freight train cars \$1,069,263.02 and passenger cars \$192,939.60. Actual repairs made to locomotives at company's shops decreased \$292,378.86, but this decrease was partially offset by a charge to locomotive repairs of \$195,095.00, representing the repair feature of locomotives converted.

Traffic expenses show a decrease of \$78,824.32.

The decrease in transportation expenses of \$1,527,627.62 is distributed throughout practically all of the primary accounts. Notable decreases are in fuel for train locomotives \$497,779.16 and in train supplies \$154,261.22.

General expenses increased \$36,826.10, due to increases in the accounts, salaries and expenses of clerks and attendants \$31,192.84, pensions \$7,827.09, valuation expenses \$25,791.69, and other expenses \$9,486.15. The other accounts in this group showed decreases. The increase in the account salaries and expenses of clerks and attendants is largely the result of increased demands on the accounting department incident to the requirements of laws with respect to accounting and the preparation of statistics for the various rate cases and proceedings, inventory work, etc. Valuation expenses for the year, \$27,439.99, are almost wholly an increase over last year as the work was not actively prosecuted until the current year.

Taxes for the year show an increase of \$119,257.64, of which \$116,894.95 is due to increases in tax rates applicable in the different states, \$12,350.00 to additional property returned for assessment, \$6,550.00 to increase in the appraisal of property by the different state boards and local assessors and \$14,015.96 in the tax on gross earnings in the State of Ohio.

Railway operating income for the year increased \$1,480,825.05. Non-operating income was \$933,198.19, an apparent increase of \$117,001.45, being largely the result of the change in accounting methods prescribed by the Interstate Commerce Commission. Dividend income, income from funded securities, and income from unfunded securities and accounts, show decreases aggregating \$26,064.91. Gross income was \$5,811,927.95, an increase of \$1,597,416.64.

Deductions from gross income for the year were \$7,785,615.30, an increase of \$721,442.94. Of this amount \$307,376.61 is in per diem on freight cars and rent for locomotives, passenger cars and work equipment, \$74,105.13 in interest on funded debt including equipment obligations, \$217,075.03 in interest on outstanding notes, (aggregating on December 31, 1914, \$8,041,810.00) and \$58,510.05 in joint facility rents. The deficit for the year was \$1,973,687.35, as compared with a deficit in 1913 of \$2,849,661.05, a decrease of \$875,973.70.

There was expended and charged to road and equipment during the year \$6,448,860.13, a detailed statement of which will be found on another page.

During the year the company advanced \$1,029.01 for construction on the Saline Valley Railway Company, all of whose capital stock and funded debt is owned by the Cleveland Cincinnati Chicago & St Louis Railway Company.

There has been charged to income the company's proportion of the deficit resulting from the operation of the Central Indiana Railway Company for the year amounting to \$76,046.13, an increase of \$14,173.27.

The operation of the Kankakee and Seneca Railroad (for which separate accounts are maintained) shows revenues for the year \$75,133.01, operating expenses, taxes and additions and betterments \$106,040.53, deficit \$30,907.52, one-half of which, \$15,453.76, was charged to income in 1914.

The Mt Gilead Short Line (for which separate accounts are maintained) shows revenues for the year \$7,016.72, operating expenses and taxes \$11,207.52, non-operating income \$130.50, deficit \$4,060.30, all of which was charged to income in 1914.

The statement of financial operations affecting income for the year includes the operation of the Peoria & Eastern Division from Springfield, Ohio, to Pekin, Illinois, the accounts for 1913 being restated for comparative purposes. Separate accounts for this division are maintained and the operations for the year 1914 show revenues amounting to \$3,025,668.63, operating expenses and taxes \$2,568,913.21, operating income \$456,755.42, non-operating income \$209,221.39, gross income \$665,976.81, deductions from gross income \$826,382.40, deficit \$160,405.59.

The financial condition and results from operation for the year for The Cincinnati Northern Railroad Company are shown in a separate report.

The credit balance in equipment replacement account on December 31, 1913, was..... \$2,002,412.21

There was added during the year 1914 representing value of equipment retired

878,150.58

\$2,880,562.79

There was charged against this account the following:

Locomotives	\$924,141.39
Passenger cars	62,450.24
Freight cars	75,507.91
Work cars	12,193.50

\$1,074,293.04

Balance December 31, 1914..... \$1,806,269.75

The City of Indianapolis is engaged under contracts with the railways in constructing sewers, changing the channel of Pogue's Run, etc., as a work preliminary to the separation of grades within the central part of the city. When completed all the companies affected, including this company and the Indianapolis Union Railway Company, in which this company is a stockholder, will be required to proceed with the separation of grades. It is estimated that this company's proportion of the cost of the improvements will be \$950,000.00, and that the work will be completed by July 1, 1918.

In the operation of the pension department 63 employees were retired and placed upon the pension rolls. Of these retirements, 35 were authorized because of the attainment of seventy years of age and 28 because of total and permanent physical disability. Twenty-six pensioners died during 1914, and at the close of the year 255 retired employees were carried upon the pension rolls. The total amount paid in pension allowances during the year was \$62,706.74.

Appointments during the year were as follows:

On January 1, Rush R. Harris, Superintendent Freight Transportation.

On January 1, Joseph R. Cavanagh, Superintendent Car Service.

On January 1, Ira S. Downing, General Master Car Builder.

On March 10, Daniel J. Mullen, Superintendent Motive Power.

On May 1, Charles J. Brister, Traffic Manager.

On May 15, Sidney B. Kent, Superintendent Dining Cars.

On June 10, Charles A. Theis, Chief Claim Agent.

On July 1, William T. Stevenson, Assistant General Freight Agent.

On the pages following will be found the general balance sheets and tabulated statements showing results of operation for the year.

Your property is in good physical condition and your officers and employees are loyal and efficient. Much credit is due them for the hard and painstaking work performed through the flood and since, and I express my thanks and appreciation to each.

ALFRED H. SMITH,
President.

MICHIGAN CENTRAL RAILROAD COMPANY'S SIXTY-NINTH ANNUAL REPORT

To the Stockholders of

THE MICHIGAN CENTRAL RAILROAD COMPANY:

The Board of Directors herewith submits its report for the year ended December 31, 1914, with statements showing the results for the year and the financial condition of the company.

The report covers the operation of mileage, as follows:

	Miles
Main line	270.07
Proprietary lines	326.29
Leased lines	1,110.50
Lines operated under trackage rights.....	93.18
Total road operated (as shown in detail on another page). 1,800.04	

There was an increase of three-tenths (.3) of a mile, compared with the previous year, the result of a re-measurement of leased lines.

Of the total road operated, 73.38 miles are operated in freight service only and 26.44 miles in passenger service only.

There was no change in capital stock during the year, the amount authorized and outstanding being \$18,738,000.00.

The funded debt outstanding December 31, 1913, was..... \$44,587,252.36

It has been increased during the year by pro-rata liability for certificates under the New York Central Lines Equipment Trust Agreement of 1913..... 639,580.41

\$45,226,832.77

It has been decreased during the year by payment of pro-rata of installments on account of New York Central Lines equipment trust certificates

November 1, 1914 trust of 1907.....	\$260,425.45
January 1, 1914 trust of 1910.....	368,019.72
January 1, 1914 trust of 1912.....	151,710.90
January 1, 1914 trust of 1913.....	64,279.71

844,435.78

Total funded debt December 31, 1914 (detail on another page) \$44,382,396.99

The changes in the road and equipment account during the year were as follows:

Amount charged against main line to December 31, 1913..... \$55,469,315.36*

Charged for road and equipment in 1914, as shown in detail on another page

Against capital account

For road	\$626,527.90
For equipment	\$1,059,292.56

Less:

Equipment replacement account	480,289.17	579,003.39	1,205,531.29
-------------------------------------	------------	------------	--------------

Total main line..... \$56,674,846.65

Amount charged against leased lines to December 31, 1913 \$17,799,115.56

Charged for road and equipment in 1914, as shown in detail on another page

Against capital account

For road	\$374,175.19
Less reimbursement by Canada Southern Railway Company on account of expenditures in prior years..	145,493.51

228,681.68

Total leased lines..... 18,027,797.24

Total December 31, 1914..... \$74,702,643.89

*Exclusive of depreciation reserve, now shown as a liability.

On March 2, 1914, this company issued its one year promissory notes for \$6,000,000.00, bearing interest at the rate of 4 1/4% per annum, and retired its one year 4 1/4% notes for \$4,000,000.00, which matured on that date.

Additional advances aggregating \$9,237.29 were made to The Detroit, Delray & Dearborn Railroad Company during the year for completion of improvements, for which this company will be reimbursed by the proceeds of the sale of additional capital stock of that company.

This company advanced to the Toronto, Hamilton & Buffalo Railway Company, during the year, on its promissory notes, bearing interest at 6% per annum, \$100,000.00, as its one-sixth proportion of the estimated cost of construction of The Erie & Ontario Railway, a new railroad incorporated May 27, 1914, and extending from a connection with the Toronto, Hamilton & Buffalo Railway at Smithville, to Port Maitland, Ontario, on Lake Erie, a distance of about eighteen miles. Agreement for amalgamation of this road with the Toronto, Hamilton & Buffalo Railway Company was approved by the Governor in Council December 15, 1914, and will be made effective on filing at Ottawa, January 30, 1915. The road was completed and placed in operation December 22, 1914, between Smithville and Dunnville on the Grand River, a distance of 14.9 miles. It is expected, owing to the great natural facilities afforded at Dunnville and along the Grand River to Port Maitland, that the road will attract many industries to the territory which it serves.

Out of \$24,000,000.00 of certificates authorized under the New York Central Lines equipment trust agreement dated January 1, 1913, there were issued to December 31, 1913, an aggregate of \$15,494,000.00, of which this company's pro-rata allotment was \$2,055,234.09.

During the year 1914 additional certificates were issued amounting in

total to \$6,944,000.00. The cost of the equipment assigned to this company in connection with the issue of these latter certificates is approximately \$715,230.84, and its pro-rata amount of certificates, representing an amount not to exceed 90% of the cost, is \$639,580.41.

During the year the Detroit River Tunnel Company issued and sold additional Terminal and Tunnel 4 1/2% Fifty-Year Gold Bonds to an aggregate amount of \$4,000,000.00. These bonds bear date May 1, 1911, and the principal and interest is guaranteed by The Michigan Central Railroad Company under an agreement dated May 10, 1911. The proceeds arising from the sale of the bonds were used in the completion of the passenger station and terminal yards at Detroit.

Since January 1, 1914, the effective date of the lease covering the use of the Detroit River Tunnel Company's terminal station and facilities, the items of expenditure covering the maintenance and operation of the properties have been included with the operating results of The Michigan Central Railroad Company.

In accordance with the terms of an agreement with the Canada Southern Railway Company, dated January 2, 1906, and upon the satisfaction during the year of that company's second mortgage, which matured March 1, 1913, this company acquired the entire capital stock, namely 15,476 1/2 shares, and \$1,500,000.00 of outstanding first mortgage 4% bonds of the Toledo, Canada Southern & Detroit Railway Company.

Three additional shares of stock of the Michigan Air Line Railroad Company were acquired by purchase during the year, thereby increasing this company's holdings to 6,688 1/4 shares, out of a total of 7,855 shares outstanding.

The old passenger station at the foot of Third Street, Detroit, which was partially destroyed by fires in December, 1913, and February, 1914, was repaired and has furnished needed additional facilities for the transaction and handling of this company's freight business.

SUMMARY OF FINANCIAL OPERATIONS AFFECTING INCOME.

OPERATING INCOME RAILWAY OPERATIONS	1914 miles operated	1913 miles operated	Increase or Decrease .30 miles
	\$33,464,968.45	\$36,676,970.58*	
Revenues	25,181,483.72	28,003,098.71*	-2,821,614.99
Expenses			
NET REVENUE FROM RAILWAY OPERATIONS	\$8,283,484.73	\$8,673,871.87	\$390,387.14
Percentage of expenses to revenues	(75.25%)	(76.35%)	-(1.10%)
RAILWAY TAX ACCRUALS.....	\$1,598,350.12	\$1,392,813.51	\$205,536.61
UNCOLLECTIBLE RAILWAY REVENUES	3,339.04		3,339.04
TOTAL	\$1,601,689.16	\$1,392,813.51	\$208,875.65
RAILWAY OPERATING INCOME \$6,681,795.57	\$7,281,058.36	-\$599,262.79	
NON-OPERATING INCOME			
Joint facility rent income.....	\$227,227.12	\$255,584.14	-\$28,357.02
Miscellaneous rent income.....	1,915.87	1,725.94	189.93
Miscellaneous non-operating physical property	663.13		663.13
Separately operated properties— profit	225.28		225.28
Dividend income	488,159.50	746,941.50	-258,782.00
Income from funded securities.	46,880.00	46,880.00	
Income from unfunded securities and accounts.....	160,143.56	192,198.54	-32,054.98
Miscellaneous income	1,148.21	2,726.72	-1,578.51
TOTAL NON-OPERATING INCOME	\$926,362.67	\$1,246,056.84	-\$319,694.17
GROSS INCOME	\$7,608,158.24	\$8,527,115.20	-\$918,956.96
DEDUCTIONS FROM GROSS INCOME			
Hire of equipment—debit balance	\$1,364,848.81	\$1,367,204.56*	-\$2,355.75
Joint facility rents.....	569,131.09	579,350.32	-10,219.23
Rent for leased roads.....	3,402,187.00	3,662,313.88	-260,126.88
Miscellaneous rents	14,985.36	8,574.08	6,411.28
Miscellaneous tax accruals.....	2,675.68	20,652.97	-17,977.29
Separately operated properties— loss	9,318.90	52,246.83	-42,927.93
Interest on funded debt.....	1,286,005.92	1,258,304.38	27,701.54
Interest on unfunded debt.....	543,024.33	294,195.68	248,828.65
Miscellaneous income charges..	1,561.71	1,112.00	449.71
TOTAL DEDUCTIONS FROM GROSS INCOME	\$7,193,738.80	\$7,243,954.70	-\$50,215.90
NET INCOME	\$414,419.44	\$1,283,160.50	-\$868,741.06
DIVIDENDS, TWO EACH YEAR— 4% IN 1914, 6% IN 1913....	749,520.00	1,124,280.00	-374,760.00
DEFICIT FOR THE YEAR (SURPLUS IN 1913).....	\$335,100.56	\$158,880.50	-\$493,981.06

*Revised for comparison.

AMOUNT TO CREDIT OF PROFIT AND LOSS (FREE SURPLUS) DE- CEMBER 31, 1913	\$13,155,998.88
ADD:	
Received from the New York Central and Hud- son River Railroad Company in adjustment of accounts in connection with Buffalo terminals \$65,917.11	
Sundry adjustments and cancellations (net) ... 18,728.90	84,646.01
	\$13,240,644.89
DEDUCT:	
Deficit for the year 1914.....\$335,100.56	
Discount, commission and expenses on equip- ment trust certificates of 1913..... 18,070.27	
Improvement expenditures on Canada Southern Railway prior to 1914 assumed by lessee..... 476,278.85	
Pullman Company adjustment account..... 50,000.00	879,449.68

BALANCE TO CREDIT OF PROFIT AND LOSS (FREE SURPLUS) DE- CEMBER 31, 1914	\$12,361,195.21
--	-----------------

The statements herein are prepared in accordance with the classifications issued by the Interstate Commerce Commission, effective July 1, 1914, and the results of the previous year have been revised for comparative purposes.

For the year covered by this report the revenue from transportation was \$32,442,460.81, a decrease of \$3,195,934.01 as compared with the previous year; revenue from incidentals and joint facilities was \$1,022,507.64, a decrease of \$16,068.12. The total gross revenue from railway operations was \$33,464,968.45, a decrease of \$3,212,002.13, due to the general business depression throughout the year, and which was aggravated by the European war, and to other causes mentioned in connection with separate classes of revenue.

The freight revenue was \$20,717,272.24, a decrease of \$2,452,245.58, resulting from a decreased movement of nearly all commodities. This is particularly noticeable in the tonnage of lumber, iron, steel and manufactured products, in which there is a decrease of about 25.4%. The decrease in anthracite coal tonnage is due to the increased movement by water routes, and the decrease in the bituminous tonnage to the labor troubles in the Ohio coal districts.

The prevalence of the hoof and mouth diseases in districts tributary to this company's lines, with the consequent embargoes imposed, caused a decrease in the movement of live stock, packing house products, hay and other commodities. The restrictions imposed affected especially traffic of this nature entering in or passing through the Dominion of Canada. The loss in revenue from this cause was, approximately, \$103,000.00.

The principal items showing an increased movement are fruit and vegetables, due to large citrus fruit shipments from the Pacific coast and to the abundant Michigan crop.

In May, 1913, this company joined with other carriers in an application to the Interstate Commerce Commission for an increase of approximately five per cent in freight rates. After devoting considerable time to hearings, and requiring the carriers to submit a voluminous amount of data compiled at a large expense to the carriers, the Commission granted to roads in Central Freight Association territory an increase of five per cent to apply on class rates and certain commodities, but not including coal, ore and several other commodities which comprise a large proportion of the tonnage handled by the company. The increased rates became effective October 26, 1914, and have not therefore, materially affected the freight revenue of the company for the year. The Commission, in rendering their decision on the application for increased freight rates, recommended an increase where permissible, in passenger rates, and the abolition of various kinds of free service heretofore performed by the railroads. A further opinion submitted by the Commission on December 16, 1914, granted increases on certain commodities, and in certain territory excepted in its previous decision, but these increases do not become effective until January 15, 1915.

The passenger revenue was \$8,880,613.03, a decrease of \$488,442.36. The European war directly caused a decrease of approximately \$170,000.00 in immigrant business, also a loss of passenger traffic via Montreal, for which new through train service had been established. Compared with 1912 there is an increase of approximately \$631,000.00.

Revenue from the transportation of mail was \$469,259.59, an increase of \$24,532.64, due to increased compensation allowed from July 1, 1913, account parcel post.

Express revenue was \$1,443,143.62, a decrease of \$273,160.26 as compared with the previous year, attributable to smaller volume of business handled, caused by the business depression and increasing use made of the parcel post facilities; also to reduction in express rates ordered by the Interstate Commerce Commission, which became effective February 1, 1914.

Revenues from all other sources, including incidental and joint facility operating revenues, were \$1,954,679.97, a decrease of \$22,686.57; the principal increases being \$8,162.37 in station and train privileges, and \$20,882.91 in grain elevators; the decreases being \$19,860.78 in switching, \$45,964.69 from hotels and restaurants and \$10,617.84 in demurrage.

The total railway operating expenses were \$25,181,483.72, a decrease of \$2,821,614.99, as per detail on following pages. By groups the decreases were as follows:

Maintenance of way and structures.....	\$1,248,157.52
Maintenance of equipment	739,676.67
Traffic expenses	38,002.56
Transportation expenses	843,402.84
Miscellaneous operations	16,773.64
	\$2,886,013.23
Increase—General expenses	64,398.24
	\$2,821,614.99
Total	

The decrease in maintenance of way and structures is accounted for by a general retrenchment affecting nearly all of the items in this group. The decrease in maintenance of equipment is almost entirely accounted for by the general reduction in repairs to all classes of rolling stock on account of the falling off in traffic handled.

The noticeable decreases in traffic expenses are in advertising and fast freight lines. The decrease in the latter expense is partially offset by an increase in outside agencies, due to the withdrawal from participation in

certain fast freight line expenses and the establishment of independent soliciting agencies.

The decrease in transportation expenses is principally due to the falling off in freight and passenger traffic, with a resulting reduction in freight and passenger train mileage as compared with the previous year. The purchase in the latter part of 1913, of more powerful locomotives made possible an increase over that year in the average freight train load. There was an expense of approximately \$25,000.00 incurred in connection with cleaning, disinfecting, repaving, etc., at stock yards on account of the prevalence of the hoof and mouth disease. The large increase incidental to higher rates of wages paid various classes of labor, as well as other causes not prevailing a year ago, have been overcome by extraordinary economies in operation.

The larger portion of the increase in general expenses is due to the employment from the middle of 1913 of additional clerks for a more thorough revision of waybills, and for paying employees twice a month, the expenditure for the full year being thus compared with that for six months of the previous year, the remainder of the increase is due to unusual requirements for supplies and furniture, coincident with the occupancy of offices in the new terminal station, and to preliminary work in connection with the valuation of the company's property by the federal government.

The railway tax accruals for the year were \$1,598,350.12, an increase of \$205,536.61 as compared with the previous year, of which \$124,563.80 is in connection with the property of the Detroit River Tunnel Company, and due principally to an increased valuation of that property by the State of Michigan and Dominion of Canada. The balance is largely due to increased rates on all property in the various states and Dominion of Canada.

The non-operating income was \$926,362.67, a decrease of \$319,694.17, as compared with the previous year, due principally to decrease of \$258,782.00 in dividend income, also decrease in joint facility rent, and in income from unfunded securities and accounts.

The deductions from gross income amounted to \$7,193,738.80, a decrease of \$50,215.90; the principal fluctuations being decrease of \$261,358.00 in rental of the Detroit River tunnel and terminal as compared with the previous year which included allowance for operation and maintenance charges, and taxes; increase of \$27,701.54 in interest on funded debt, due to equipment trust certificates and increase of \$248,828.65 in interest on unfunded debt, partially offset by decrease of \$42,927.93 in separately operated properties—loss.

The final result for the year, after the declaration of a dividend of 4% upon the capital stock, was a deficit of \$335,100.56.

The changes in equipment replacement account during the year were as follows:

Credit balance equipment replacement account December 31, 1913	\$671,478.11
There was added during the year:	
Value of equipment retired from service.....\$768,887.25	
Allowance by C I & S R R Co account short- age in equipment covered by lease of the St J S B & S R R	23,072.07 791,959.32
	\$1,463,437.43
Less cost of 144 box cars and 1 official car acquired during the year, and cost of application of superheaters to loco- motives and other additions and betterments to equipment	311,670.15
Credit balance, December 31, 1914.....	\$1,151,767.28

In the operation of the pension department, forty-nine employees were retired and placed upon the pension rolls. Of these retirements, twenty-eight were authorized because of the attainment of seventy years of age, and twenty-one because of total and permanent physical disability. Twenty-three pensioners died during 1914, and at the close of the year two hundred thirty retired employees were carried upon the pension rolls. The average monthly pension allowance to these employees was \$27.70, and the total amount paid in pension allowances during the year was \$58,615.60.

The principal expenditures for improvements during the year, as shown in detail on another page, were as follows:

Additional expenditure at Junction Yards, West Detroit....\$184,219.33	
Completion of ice house, West Detroit..... 19,755.49	
Completion of elevator, Kensington..... 138,917.53	
Completion of bridge over L S & M S Ry at Air Line Junction	34,212.15
Additional expenditures on Saginaw River draw bridge at Saginaw, in excess of replacement charges..... 16,249.16	
Logging branches on Mackinaw Division..... 14,665.35	
Total	\$408,019.01

The death during the year of three venerable officers of the company is recorded.

Major George C. Hopper, retired Paymaster, died in Detroit, June 22, 1914, at the age of eighty-three. Major Hopper worked for this company sixty-eight years. He entered its employment when it was organized in 1846, and his long period of service was unbroken, except during a leave of absence from 1861 to 1864, when he was in the Union Army. He retired from the army with the rank of Major, and credited with distinguished services. He was an able, all-around man, and on account of his usefulness was appointed to many different positions in the service, and always did his work well.

Edwin C. Brown, retired January, 1910, after thirty-nine years' service in the positions of Division Superintendent, Assistant General Superintendent and General Superintendent, died in Detroit, December 4, 1914, at the age of eighty-three. Mr. Brown was a master in his time in the conduct of transportation, and he had practical, personal charge of train operation until his retirement. He rendered efficient service and won the respect and good will of all with whom he came in contact.

Thomas Eedson, retired Auditor of Freight Accounts and Freight Claim Agent, died in Detroit, November 1, 1914, at the age of seventy-three. Mr. Eedson came into the service of this company in 1883 from a position with the Canada Southern Railway Company, and remained in the accounting department until his retirement in 1912. He also held a similar position with the Toronto, Hamilton & Buffalo Company from the date of its organization to the date of his death. He was an industrious man, of studious and inquiring mind, and rendered good service in his own department as well as in the organization and conduct of the Freight Claim Association and the Association of Railway Accounting Officers.

Acknowledgment is hereby rendered to officers and employees for faithful and efficient service.

ALFRED H. SMITH,
President.